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FORMERLY

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(Original Official Organ U. S. Vet. Med. Assn.)

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IOWA SHOWS THE WAY

The annual meeting of the Iowa Veterinary Association, held in Des Moines, in January, was an epochal occasion. A report of the meeting appears on another page in this issue, and it would be a good idea for every veterinarian to read it. President Bergman and Secretary Steel, as well as all other officers and the members, are to be congratulated for putting over a really big idea in splendid fashion.

Iowa has been referred to as being the birth-place of farmer vaccination, and the hot-bed for anti-veterinary legislation and kindred ills, but apparently a better day is dawning for the veterinarians in that great state. There is nothing like getting together and talking it over, where there is a difference of opinion. This is exactly what the Iowa men have done. They have shown the way.

Invariably there are at least two sides to all such questions and unless you can present your side to the other fellow you can not hope for a satisfactory settlement. By showing the veterinarians' side to the members of the Iowa Legislature, a better understanding has been made possible. The Iowa law-makers now know what the real situation is. The report of the meeting shows how the revelation was brought about. Read it. Apply the remedy in your own state, if necessary. The formula is not patented.

MEAT AND MILK INSPECTION

In this issue we are publishing a group of papers bearing upon different phases of meat and milk inspection. This subject is one in which veterinarians are showing a marked inclination to take more interest as time goes on. This is natural, for the reason that the veterinarian, by virtue of his special training, is better adapted to engage satisfactorily in work of this kind than men of different training.

During the past few months a number of meetings of veterinary associations have been held at which a considerable portion of the program was devoted to the subject in hand. A number of very valuable papers have been presented at these meetings, and a great deal of profitable discussion followed the reading of the papers.

During the week of the second annual Post-Graduate Short Course for Veterinarians, conducted by the Veterinary Division of the Michigan Agricultural College, in January, one entire evening was given over to a conference at which plans were discussed for the extension of meat inspection into the smaller cities of Michigan.

There are two facts in connection with meat inspection that almost invariably create a very deep impression in the mind of the average layman, when these facts are brought to his attention. The first is the fact that practically all of the inspection of meat is done by veterinarians or directly under veterinary supervision. The second fact is that a great deal of the meat which is consumed in this country does not have inspection of any kind, and usually the question is asked, "Why?"

Almost invariably, when there is under discussion a proposal for veterinarians to become active in advocating ordinances for municipal meat or milk inspection, or both, some one will make the assertion that "it can't be done," for the reason that veterinarians must necessarily appear in the light of seeking jobs for themselves. Of course, there will be some criticism on this score, but it need not be a reason for deterring any veterinarian from making the effort. The best of intentions are frequently misinterpreted.

On the other hand, we have a number of examples of what can be done along this line by veterinarians, if they go about it in the right sort of a way. Dr. E. D. King, Jr., has organized a system of meat and milk inspection for Valdosta, Ga., which

has put his city on the map, so to speak, so much so that the system of inspection now in vogue in Valdosta has been the subject of a number of splendid articles published in the southern papers. Right here in our own city, Detroit, there has been developed a system of municipal meat inspection second to none, under the direction of Dr. H. H. Sparhawk, Chief Veterinarian of the Board of Health. Other municipalities are constantly sending men to Detroit to study the system which has been developed.

In towns and smaller cities, where the amount of inspection is not sufficient to warrant the employment of the full time of a veterinarian, it is possible to carry on meat inspection in conjunction with a private practice in a highly satisfactory manner. A statement which was recently made by a prominent veterinarian, and which found its way into the public press, is to the effect that, in some parts of the country, at least, veterinary practice has become so poor that it is necessary for veterinarians to supplement practice with a side line. We can think of no better side line than food inspection, and such work is certainly to be preferred to some of the side lines in which a few veterinarians have thought it necessary to engage. Read carefully the papers on the subject in this issue and try to apply some of the suggestions made in them. It will be worth your while.

SMALL ANIMAL PRACTICE

As reported in the minutes of the December meeting of the Executive Board, published in the January issue of the JOURNAL, arrangements have been made for the organization of a section on small animal practice in the American Veterinary Medical Association, making the fourth section to be organized. President Merillat has appointed Dr. E. A. Ehmer, of Seattle, Wash., to act as chairman and Dr. J. C. Flynn, of Kansas City, Mo., as secretary of the section, until officers are regularly elected at Portland.

Small animal practice, especially in our cities and larger towns, has assumed important proportions during recent years, and now goes a long way to make up the loss in city practice caused by the replacement of a large number of horses with motor vehicles. There are phases of small animal practice which make it particularly attractive and, at the same time, highly remunerative. There is no denying the fact that the

treatment of the diseases of the dog and cat, including the surgical operations peculiar to these animals, is a highly specialized branch of veterinary science.

To be a successful small animal practitioner requires considerable specialized training, and this is now being given in most, if not all, of our veterinary colleges. It is now the exception, rather than the rule, for the program of a veterinary meeting not to have something along the line of small animal work. Small animal clinics now constitute a recognized feature of a number of these meetings, as well as of a number of the annual conferences and short courses held in various states. The demand for exceeds the supply of highly scientific articles on small animal diseases.

The statement was recently made that modern methods for diagnosing and treating some of the disease of dogs and cats more closely approximate the methods used in human medicine than in any other branch of veterinary practice. A modern veterinary hospital is not complete without considerable equipment for use in connection with clinical and laboratory diagnosis, and a majority of the clients of those veterinarians who daily apply modern scientific methods in their work seem to appreciate, in no small degree, what the veterinarian tries to do for his small animal patients.

It is to be hoped that the members of the A. V. M. A., who are interested in small animal practice, will turn in and make a big success of our new section. Communicate with Dr. Flynn and make suggestions for the program of this section for the Portland meeting. Well written case reports from small animal practitioners are invited for the pages of the JOURNAL.

EXECUTIVE BOARD ELECTION

By the time this notice is read the polls for the nomination of a member of the Executive Board, to represent District No. 5, will have been closed. In the states making up this district there are in excess of 600 members in good standing and eligible to vote, yet the number who availed themselves of the opportunity to indicate a choice for this very important office scarcely exceeded 25 per cent. We know by experience that quite a large number who do not cast a nominating ballot will cast a ballot in the election proper, when they have the names of five members definitely before them and of whom a choice must be made.

It is to be hoped that every member in District No. 5, who receives a ballot, will not pass up the opportunity of expressing a choice in this election, but will return the ballot promptly to the office of the Secretary properly marked and signed. Although the polls will remain open until May 15, 1925, this is no reason why a member should procrastinate in the matter. In this particular election the polls must remain open for sixty days, as it takes that length of time for a letter to go to the Philippines and a reply received.

APPLICATIONS FOR MEMBERSHIP

(See October, 1924 JOURNAL)

FIRST LISTING

- BARBER, JOSEPH SQUIRE Princeton, Iowa
M. D. C., Chicago Veterinary College, 1910
Vouchers: H. D. Bergman and W. F. Guard
- FREER, C. B. 17 Park St., Ellenville, N. Y.
D. V. M., Cornell University, 1923
Vouchers: V. A. Moore and C. M. Carpenter.
- HANSON, CARL Faribault, Minn.
D. V. M., Iowa State College, 1921
Vouchers: E. A. Hewitt and H. C. H. Kernkamp.
- HOLMGREN, WALTER FRANK Lake Benton, Minn.
D. V. M., Indiana Veterinary College, 1922
Vouchers: C. J. Sigmond and L. Hay.
- SANTAMARIA, SERAFIN Army Medical School, Washington, D. C.
D. V. M., Havana University, 1914
Vouchers: J. A. McKinnon and James A. McCallam.
- SIEMER, C. E. Barnum, Minn.
D. V. S., Ontario Veterinary College, 1916
Vouchers: C. P. Fitch and H. C. H. Kernkamp.

APPLICATIONS PENDING

SECOND LISTING

- Bower, Laurence Robert, Vet. Corps, U. S. Army, Washington, D. C.
- Johnsen, O. W., Box 90, Davenport, Wash.
- Long, Earl F., c/o Surgeon General's Office, Washington, D. C.
- Massey, Roy William, 532 East Haley St., Santa Barbara, Calif.
- Miller, J. P., Wooldridge, Mo.
- Rodier, Eugene A., Pullman, Wash.
- Unbewust, G. A., Harrington, Wash.
- Wineland, E. D., Barber, Ark.
- Woodruff, Frank H., c/o Adjutant General, U. S. A., Washington, D. C.

MEMBERSHIP DIRECTORY

A new edition of the A. V. M. A. membership directory is in preparation. The directory will list a member at the address to which his JOURNAL is sent, unless we have been otherwise directed. In a few cases members have asked us to send the JOURNAL to one address, although they are located some

place else. We do not like to be obliged to do this unless absolutely necessary.

A member will sometimes write and give his residence address, and the next time he writes give his office or hospital address. We are at a loss to know whether this is a change of address or not. We would very much prefer to have one address for a member to which all correspondence, including the *JOURNAL* may be addressed. As stated before, we know that there are cases where this is not possible, but hope that members will bear with us and keep the number of such duplications of addresses as low as possible.

COMING VETERINARY MEETINGS

Oklahoma State Veterinary Medical Association. Huckins Hotel, Oklahoma City, Okla. Mar. 2-3, 1925. Dr. L. B. Barber, Secretary. 100 Live Stock Exchange, Oklahoma City, Okla.

New York City, Veterinary Medical Association of. Academy of Medicine, 17 W. 43rd St., New York, N. Y. Mar. 4, 1925.

Dr. C. G. Rohrer, Secretary, 40 W. 61st St., New York, N. Y. Thumb (Mich.) Veterinary Medical Association. Mar. 5, 1925.

Dr. M. F. McIlmurray, Secretary, Elkton, Mich.

Conestoga Veterinary Club of Pennsylvania. Stevens House, Lancaster, Pa., March 12, 1925. Dr. Henry S. Weber, Secretary, 27 E. Liberty St., Lancaster, Pa.

Massachusetts Veterinary Association. American House, Boston, Mass. Mar. 25, 1925. Dr. H. W. Jakeman, Secretary, 44 Bromfield St., Boston, Mass.

Saginaw Valley (Mich.) Veterinary Medical Association. Bay City, Mich. Mar. 26, 1925. Dr. W. E. Coomer, Secretary, 907 W. Midland St., Bay City, Mich.

Southeastern Michigan Veterinary Medical Association. Detroit Mich. Apr. 8, 1925. Dr. H. Preston Hoskins, Secretary, 735 Book Bldg., Detroit, Mich.

Maine Veterinary Medical Association. Portland Me. Second week, April. Dr. A. J. Neal, Secretary, Bangor, Me.

Capitol Veterinary Medical Association. Lansing, Mich. Apr. 16, 1925. Dr. A. E. Erickson, Secretary, Charlotte, Mich.

Southwestern Michigan Veterinary Medical Association. Kalamazoo, Mich. Apr. 30, 1925. Dr. Geo. M. McCollister, Secretary, Kalamazoo, Mich.

DOUCHING OF THE RECENTLY GRAVID UTERUS COMPARED WITH OTHER METHODS OF HAND- LING RETENTION OF THE AFTERBIRTH IN THE COW¹

By HERBERT LOTHE, *Waukesha, Wis.*

Retention of the afterbirth, a common occurrence in the cow, as we all know, is not the benign affair many cattle owners and some veterinarians think it to be. While it is true that the prognosis, as a rule, is good as far as the life of the cow is concerned, from the standpoint of lowered breeding efficiency, lessened returns in milk and loss in flesh during the period of convalescence, the outcome is not so gratifying. Grim¹ reports that, of 316 cases where no treatment was resorted to, 186 (58%) were sold as barren or unprofitable and, of the 130 remaining in the herd, 118 were sterile for various reasons; he reports only 7 (2.2%) deaths from septic metritis. The field of treatment lies, therefore, not so much in conservation of life, for nature takes care of that pretty well, if not interfered with by injudicious treatment, but in lowering the losses from sterility and shortening the period of convalescence with its losses.

The methods of handling this condition vary with different individuals as the following brief resumé of available literature will show. Albrechtsen² advises removal by hand if possible, with no uterine douch; if too adherent to permit removal it is left until decomposition sets in, when it is removed in its entirety and the uterus douched with $\frac{1}{4}$ to $\frac{1}{10}$ of 1 per cent of Lugol's solution. He states that solutions retained in the uterus are harmful by preventing involution and facilitating infection. Williams³ removes the afterbirth if possible and holds douching of little value, but does not condemn the douche in selected cases. He is partial to capsules of iodoform or iodoform suspended in oil. DeVine⁴ uses hot saline douches (several gallons of fluid) daily or twice daily, both where afterbirth has been removed and when impossible to remove. He cites "just one danger . . . rupturing rather than cleansing the uterus." He advises against irrigations in cases where the uterus has lost tone (septic metritis). Udall⁵ advises manual removal if possible, followed by a uterine douche of sterile normal saline solution and paraffine

¹Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

oil. Hallman⁶ removes the afterbirth if possible and irrigates the uterus with a non-irritant solution after removal and when impossible to remove. Hayes⁷ advises removal by hand if possible, after 24 to 36 hours; if removal is impossible he uses a hot saline douche daily or oil with and without iodoform and boric acid. He advises against strong antiseptic douches and recognizes the danger of uterine rupture. Turner⁸ recommends manual removal if possible, after first irrigating the vagina with normal saline solution. He uses a uterine douche of saline solution if the uterus is contracting strongly but "if the uterus is paretic, the less fluid the better." If the afterbirth cannot be removed bismuth-formic-iodide in oil with vaginal douche by attendant is used. Kempf⁹ uses manual removal if possible and repeated uterine douches of hot saline solution in cases where removal is impossible. Balkam¹⁰ employs methods similar to those of Kempf. Grim¹ reports the use of different methods but in no cases were uterine douches a part of the treatment. Those cases did best where removal was possible within 36 hours. Lothe¹¹ removes the afterbirth when possible and places feebly soluble antiseptics (iodoform, boric acid, etc.) into the uterus, both after removal and when removal is impossible. Uterine douches are not used until involution is about complete and then only to correct conditions tending to produce sterility.

From the preceeding it is evident that there are differences of opinion as to methods of handling retained afterbirth. All methods reported have one thing in common, namely, removal if possible. There seems to be no argument as to the advisability of removal but it is after removal has been accomplished and in cases where removal is impossible or contraindicated that methods vary. A certain number employ uterine douches of saline solution while others strictly taboo the douche and use in its place iodoform, boric acid, and paraffin oil. Unfortunately clinical data on any great number of cases where different methods of treatment were employed are not available. The report by Grim¹ is the most comprehensive I am familiar with and indicates, to my mind, that satisfactory results can be had by the use of methods in which uterine irrigation holds no place.

It is not the writer's intention to offer any new methods of treatment nor to go into a discussion of the etiology and pathology of retained placenta, interesting as these considerations may be. I simply wish to present some figures compiled from records kept on 237 cases of retained afterbirth, where notes were made at

the time of treatment and the subsequent breeding history is available, and point out what the results seem to indicate to me.

These are cases largely from two herds of dairy cows of considerable commercial value for the treatment of which the writer received pay in return for which the owners expected results commensurate with the money expended. The herds were not experimental ones where different methods of treatment could be tried out indefinitely; if, after using a method of treatment upon a few animals, the results looked unpromising, that method was discontinued.

TABLE I—*Results of treatment of 237 cases of retained afterbirth*

HISTORY	NUMBER	%
Freshened normally.....	75	31.6
Freshened; retained placenta.....	27	11.4
Aborted.....	21	8.8
Pregnant.....	22	9.3
Capable of conception.....	145	61.2
Barren.....	55	23.2
Died; septic metritis.....	11	4.6
Capable of conception.....	66	27.8
Died; other causes.....	7	2.9
Condition unknown.....	19	8.0
Capacity for conception unknown.....	26	10.9

Table I shows what occurred following retained afterbirth in 237 cows, regardless of how they were handled. It will be seen that 61.2 per cent were capable of conception although abortions occurred in 8.8 per cent of the cases, which is about, or a little less than, the prevailing abortion rate for the herds. Twenty-seven and eight-tenths per cent were incapable of conception, in spite of the fact that diligent veterinary service was applied to correct conditions tending to cause sterility. It is also worthy of note that 11 per cent of the cases that conceived had retained afterbirth at the next freshening, although they dropped full-time calves. Under the caption "pregnant" are listed cows that have conceived since retaining the afterbirth but have not completed their gestation period to date; we have no way of knowing whether they will freshen pathologically or physiologically.

TABLE II—Results of different methods of treatment

TREATMENT GIVEN PLACENTA		Total No.	FRESHENED NORMALLY		FRESHENED WITH RETAINED PLACENTA		ABORTED		PREGNANT		BARREN		DIED; SEPTIC METRITIS		DIED; OTHER CAUSES	CONDITION UNKNOWN
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Removed	Term	4	3	75.0									1	25.0		
	Abortion	2									1	50.0				1
Removed + Uterine Douche	Term	6									4	66.7	2	33.3		
	Abortion	0														
Removed + Uterine Capsules	Term	145	45	31.0	23	15.8	13	8.9	18	12.4	30	20.6	4	2.7	5	7
	Abortion	57	20	35.1	3	5.2	5	8.7	3	5.2	15	24.6			1	10
Removed + Oil and Iodoform	Term	4	1	25.0	1	25.0							1	25.0	1	
	Abortion	1	1	100.0												
Not Removed	Term	3					1	33.3					1	33.3		1
	Abortion	4	1	25.0			2	50.0			1	25.0				
Not Removed + Uterine Douche	Term	3									1	33.3	2	66.7		
	Abortion	0														
Not Removed + Uterine Capsules	Term	3	1	33.3							1	33.3	1	33.3		
	Abortion	1	1	100.0												
Not Removed + Oil and Iodoform	Term	1														
	Abortion	3	2	66.7					1	100.0						
Total		237	75		27		21		22		55		11		7	19

Table II shows the ultimate outcome under different methods of treatment. It is notable that the greatest number of cases fall under the caption "removed + capsules." Experience had taught that under conditions such as prevailed upon these farms this method seemed preferable and was used most. The capsules contained iodoform with boric acid and sodium perborate. An attempt was made to remove the afterbirth within 24 to 48 hours after parturition. It may be of interest to know that in only 18 of the 237 cases was removal within that time impossible (in some cases the removal was only partial, in that parts at the tips of the uterine horns were left on account of being out of reach).

I shall not go into detail of the technic of removal, for it is not readily described in such a way as to have the description be of any value to others and I assume everyone here is familiar with the none too pleasant task; it will suffice to state that as cleanly a job as possible, with as strict attention to antisepsis as conditions would permit, was done and the uterus handled carefully with no "strong-arm" methods of effecting a removal. If the afterbirth was adherent to such an extent that removal was impossible or would cause undue straining and damage to the cow, it was not removed but allowed to decompose and come away of its own accord or be removed if possible at some later date.

Douching of the uterus with normal saline solution was resorted to in a few cases with disastrous results and the writer has since had the opportunity to observe similar results in the hands of others. For this reason I wish to bring out the difference of behavior of douched and undouched animals.

TABLE III—Results of treatment with or without removal and with or without douching

	TOTAL	DIED	%	BARREN	%
Removed; uterine douche...	6	2	33.3	4	66.6
Removed; without douche...	213	6	2.8	46	21.6
Not removed; uterine douche	3	2	66.6	1	33.3
Not removed; no douche....	15	1	6.6	4	26.6
	237	11		55	

Table III shows that where removal was possible within 48 hours and uterine douches given, the death rate was 33.3 per cent and the sterility rate 66.6 per cent, as against 2.8 per cent and 21.6 per cent where douching was not done. In cases where removal was impossible the mortality was 66.6 per cent in douched cows,

against 6.6 per cent in the undouched. You may object that the cases where douching was resorted to are out of proportion to those not douched and that the numbers contained in that group are too small to justify any conclusions being drawn from them. I am sorry that there are not more cases to report in this class but, as I stated before, this was not an experiment herd and I wanted to retain the client's work, which would have been impossible with methods where the death rate was as high as the ones reported.

Anyone who had opportunity to observe these cases as I did could not for one minute doubt that the douching was responsible for the greater part of their trouble. In the nine cases where douching was done sterile normal saline solution of body temperature only was used; at no time was any antiseptic added to the douching solution. I wish to state at this time, in justice to saline douching, that the figures given are considerably higher than would ordinarily obtain, for I have on several occasions douched recently gravid uteri without causing death or any appreciable amount of discomfort but, in the particular cases of which I have records, only nine douched ones appear and these fared badly.

In judging the merits of a method of treating retained after-birth the following factors must be taken into consideration; the number of deaths from septic metritis, the percentage of sterility and the duration of the period of convalescence. The deaths and sterility are shown by the tables but the duration of convalescence does not readily lend itself to tabulation nor were notes kept regarding it in the cases reported. In general, however, my experience has been that convalescence is prolonged after uterine irrigation and the loss of milk production and body weight in excess of that of any other method of handling. It may be of interest to know that, of the nine cases reported as douched, four showed such gross pathological changes of the genital tract, in the form of adhesions, uterine abscesses, fistulous tracts from uterus to rectum etc., that anyone with the minimum amount of knowledge of the normal feel of the uterus through the rectal wall would have little difficulty in recognizing the condition as one of incurable sterility. In only one of the 50 sterile cows not douched were such gross abnormalities detected (multiple abscess of uterine wall); in the remainder a careful examination of the genital tract was necessary to determine the cause of sterility and in a number of instances such an examination by experienced

clinicians failed to yield any definite information as to the cause for failure of conception.

Douching not infrequently causes prolonged straining, which is annoying to the owner and an expression of discomfort on the part of the cow. The irritation to the uterus is what sets up the gross disease changes we find in so many of these cases. Grim reports two cases of loss of appetite and straining for several days after the instillation of a quart of lactic acid milk. It was not so much the character of the fluid (sour milk) that was responsible for the straining but that there was any fluid at all; normal saline solution would have caused the same train of symptoms in this cow, I believe.

Theoretically it sounds plausible that douching with saline solution would be a good thing to cleanse the uterus from shreds of afterbirth, blood clots and infection, but the merits of any treatment are brought out by the results obtained rather than by philosophical theorizing. The cleansing of the uterus would probably be a good thing were it not for the fact that in quite a number of cases it is impossible to remove all the fluid introduced, which acts as an irritant, dragging the uterus downward into the abdominal cavity and tending to prevent free drainage and speedy involution of the uterus. There is probably no one factor that plays a more important part in hastening recovery than the process of involution. The sooner involution sets in after parturition the quicker will be the recovery and manual removal does stimulate contraction of the uterus in many cases, for it is not unusual to feel the uterus contract about the operator's hand and arm immediately after the removal has been completed.

While rule-of-thumb methods are probably not permissible in handling this or any other condition, nevertheless, we do have certain methods that are more or less standard for this type of case, which methods are modified to fit peculiarities of the particular case that differs from the rank and file. I feel that anyone whose method embodies douching of the recently gravid uterus as a routine practice will sooner or later get into trouble; when the afterbirth has been removed or been found impossible to remove, the uterus, as a rule, had better be left undisturbed by antiseptic or saline douches. If uterine treatment must be used, rely upon antiseptic powders such as iodoform, boric acid and sodium perborate, either with or without petroleum oil.

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DISCUSSION

DR C. H. CASE: A paper such as we have just heard read is certainly a treat. We do not get such papers every day and most of the practitioners do not have time to record such results.

Of course there are some things in which I do not agree with Dr. Lothe, and if you will notice the first part of his paper, when he recited from different authors, there certainly must be a lot of variation in different cows in different parts of the country. I can not understand the results.

He spoke of Dr. Williams' method of removing the afterbirth. I happened to have been with Dr. Williams, in 1905, and I will tell you just a little bit of what he told me. He said, "Never remove the afterbirth before seventy-two hours; it is better to leave alone any afterbirth that comes away before that time and let Nature take care of it, but never touch a cow under seventy-two hours. If you cannot remove the placenta in seventy-two hours and you have a hemorrhage, you had better leave it alone and go back the next day." Of course, sometimes the neck of the uterus contracts and you have a little trouble, but you generally can get in.

Another thing about putting iodoform in. Of course it is a good thing, but where you are producing milk for sale and the owner is anxious to get the milk to market, many gallons have been rendered unfit for consumption and our dairymen absolutely will not let us use it now.

Dr. Lothe did not dwell much on the technic. That may be a little bit where the trouble comes in. When you go to a place to remove an afterbirth, you have to have suitable clothes, in the first place, to do that kind of work. It is not disagreeable if you have the right kind of clothes and things to work with. When my clients call up the first thing I tell them is that I want water ready, a couple of pails of clean, boiled water, and then wash those animals off and get them clean. Then do not carry infection into that uterus with your hand and do more harm than good. I think these are points that you have to look out for.

Of course, we do not use normal salt solution. Formerly we used it but I think I have a solution now that is far ahead of normal salt solution, and that is sterilax solution. I make a solution for douching the uterus of ten grams to about three gallons of water.

In table three, "Removed; uterine douche," of six cows, you see two died. Recently, on account of preparing another paper, we kept track of my practice for four months, that is, March April, May and June; we kept track of the number of cows from which we removed the placenta. We removed the placenta from ninety cows. We douched every one of these cows afterwards, that is, when I say douche, I mean we pumped in clean water to which sterilax had been added and siphoned it out again. Now when you are removing the placenta you have to look out for feces; it gets on your arm, and you must keep washing that off. Every time you take your arm out, wash it off; do not carry more infection back in. Look out for that. Keep it as nearly sanitary as you can.

We use a stomach-tube and pump water into the uterus, not great quantities

of it—about two or three quarts or a gallon—and siphon it back out, after we remove the placenta, and you would be surprised at the number of particles we wash out. We keep pumping in and pumping out, not too much, not filling the uterus up full, but just a little, and you will feel the uterus contract on the arm. Then get all of the fluid out. There is where a lot of people make a mistake. I hold my hand right down over the end of the tube and get the fluid all out again.

In those ninety head, where they were all douched afterwards with water, we just had one cow die; all the rest of them were perfectly well and came along fine. I think if you remove the afterbirth in as clean a manner as possible and douche the cow afterwards, you will get better results; my clients tell me they get more for their money than anything else I do on their place.

Removal without a douche has not been satisfactory in my experience. The word should not be "douched;" they just pump water into them. That is enough to kill any cow. You are not douching, you are just pouring the water into a bag, you might say, and the weight of that causes such an irritation that it injures the cow; it will kill almost any cow in my district. I would not attempt that. I would rather not douche her than try to do anything like that. I believe that is the worst practice anybody can follow.

Dr. Adams asked me to tell you what sterilax is. It is a product made by the Abbott Laboratories. It has chlorin for its base. It is in powder form and easily carried. We have a four-dram bottle and fill it full, put a cork in and carry it along. It is enough to put in three gallons of water. I think that it is far ahead of normal salt solution because it is an antiseptic. It removes the odor from your hands. (Applause.)

Dr. E. J. FRICK: I have been surprised to realize how toxic douching is and I think the whole trouble here is that Dr. Lothe used too small a number of animals. Each animal accounted for twenty per cent of the results, while here each animal accounted for only less than one-half of one per cent, and we can not depend on the results of that table.

Now I think in the past there has been a swinging of the pendulum and there has been a great deal of advocacy of douching. The man who used the most water claimed he got the best results, and I think now the pendulum is swinging back. There is a great variety of conditions that we meet with in retained placenta, depending upon the type of secondary invaders that are present, the virulence of those invaders, and the amount of infection that you are up against, so that you will meet a case of retained placenta where the tissues appear perfectly healthy and have practically no odor and you will meet other cases that are positively putrid.

In our experience at the Kansas State Agricultural College we resort to a varied treatment, depending upon the findings of each individual case. Where there is but a spot of infection, you remove the placenta and you find small patches of necrosis and one or two spots of infection. That cow would only require perhaps a quart of solution, just enough to wash out any debris that you can readily get to. On the other hand, if there are gallons of decomposing putrid material, we believe the cow should be thoroughly washed out so as to remove the necrotic decomposing material. We endeavor to wash everything clean under those conditions and our results have been entirely satisfactory.

Where capsules have been used, and in those cases where death has occurred following the use of capsules, through careful postmortems we find there is just a small area in the uterus where the effect of the capsule has had a chance to act; the area involved is perhaps only a few inches.

We would not use any strong, irritating antiseptic solution and we always are positively certain that we have all the fluid from the uterus that we can possibly withdraw. The solution we use is acriflavine and proflavine solution, and consists of one gram of acriflavine and five grams of proflavine to a gallon of water as our stock solution. We take one ounce of the solution in a gallon of water for douching purposes. The flavines, from laboratory reports, have a specific action against the coccus group of organisms, and where they are not giving us results after one or two treatments, we immediately change to another antiseptic, very dilute potassium permanganate, because it is evidenced in our mind that the antiseptic is not attacking the organism present and some other antiseptic will give better results. (Applause.)

DR. D. H. UDALL: It came to me as a distinct shock to learn that a method I had been using for several years, almost as a routine, is followed by such disastrous results. In treating retained placenta we are handling a form of metritis. Metritis, in most cases, is the beginning of what leads to sterility, and our objective in treating metritis is to return the uterus to normal just as soon as possible, to overcome the infection at the earliest possible time.

There is no best treatment. Treating retained placenta is not treating retained placenta, it is treating metritis. I believe thoroughly in the earliest possible manual removal. We have found as a routine in practice that the time limit mentioned by Dr. Case is the most satisfactory, thirty to seventy-two hours. Often the owner insists on earlier removal and this may be possible.

Now what is the object in douching a cow? It was not clear in my own mind, when Dr. Lothe referred to douching, whether he referred in each case to introduction of fluid before or after the placenta was removed. It is malpractice, in my opinion, to introduce any quantity of water into a uterus from which the placenta has not been removed. That is not douching. Douching is used for the purpose of irrigating a uterus that is filled with debris, that contains pus and putrefactive material. The object is to remove that material, and if you introduce the fluid and leave it, your object is defeated.

The method we follow has been described by Dr. Case. Instead of a stomach catheter I use a soft-rubber Valentine tube and have my hand on the inner end. The fluid is pumped in and as soon as a suitable amount is introduced, the outer end of the tube is lowered and the fluid is siphoned off, and that is repeated as long as any debris can be removed. If it is properly done it is effective. If a cow dies she does not die because she has been douched.

Reference has been made to the use of liquid petrolatum and antiseptics. They also have an object. Petrolatum, I believe, has two main actions; first, it serves as a protection for the mucosa; second it takes up mechanically the debris and the necrotic material that in each case remains and can not be removed at seventy-two hours by any procedure.

Recent work by Dr. Hallman has shown that there still remains material that undergoes decomposition and putrefaction and finally comes away.

There are places where irrigation is not practical. These are in herds that are so far away that it is not possible to go there and treat them mechanically. I don't believe that irrigation is essential; I do believe that it has great advantages and I wouldn't like to see it condemned on a record of five or six cows, even though all of them died.

We use a pint of liquid petrolatum, or any mineral oil, to which has been added half an ounce of iodoform and half an ounce of bismuth. This is placed in the uterus. This is introduced about every forty-eight hours until after the placenta comes away. This keeps down the decomposition, keeps down the odor, and in such herds one can go back at intervals of two or three months or even six months and examine all the cows in the herd that are not pregnant.

Fundamentally we are treating metritis, and the removal of the placenta or the debris is only an incident. It is well to return when the animal reaches the breeding period—say twenty-one days or a month—and examine the uterus again. It may contain pus and require treatment, for the sooner we can bring the uterus back to normal, the smaller will be the percentage of sterility, and this is the most effective way of treating sterility. (Applause.)

DR. C. F. NEIS: I have never heard any one discuss the results with these carbo medicinalis capsules. It seems to me that the argument for the use of those is very sound and while my experience with that particular kind of cases has not been quite so extensive as some of these other practitioners in the strictly dairy districts, I have used these carbo medicinalis capsules and apparently my results have been very good.

My experience with douching is no criterion to go by; I would not feel like condemning it nor speaking for it from what experience I have had, but I know that of all the uterine capsules I have used, apparently my results with this so-called carbo medicinalis capsule have been far superior to anything I have used in the line of a uterine capsule.

Now the principle of the thing is to administer at least a dose of capsules

and to distribute them in the uterus so as to get the full effects of absorption. The idea there is absorption.

Carbo medicinalis is nothing more than medicated charcoal and these carbo medicinalis capsules contain this medicated charcoal with chlorazin, and you can make them up yourself.

DR. FERGUSON: I would like to ask the Doctor how he uses these capsules. Do you put them in there dry?

DR. NEIS: Yes, sir.

DR. FERGUSON: I just want to bring out this point. Now you can take dry capsules, filled with charcoal or anything else, and put them in a uterus, and if the uterus is comparatively dry you can recover them after a considerable length of time, with just a little mucus around them, if the cow has not evacuated them. If there is a lot of fluid in the uterus, the fluid will float them out when the cow lies down, even if the uterus is inert, so that you do not get any action from the capsule introduced into the uterus, no matter what is in the capsule, unless that capsule is properly prepared so that you can break it down as you put it in there. All that the capsule is good for is to act as a vehicle to carry in the medicinal agent; if you seal those capsules up and stick them in there, if they are clean, they won't do any harm and that is the best you can say for them.

DR. N. R. ALLEN: In the use of capsules, I just fill my hand with borax or boric acid—I prefer borax—and I use from two to four of these tablets and that produces not only a powerful effect but it also is deodorant. I usually make two insertions.

DR. LOTHE: I did not want to give the idea, and I believe I so stated in my paper, that the number of cases where douching was resorted to were not out of proportion to cases where douching was not resorted to, but I do believe I did state that I wanted to retain my clients. Now those nine cases which resulted in death occurred within a matter of three weeks, and you would have an awful time arguing with the owner that douching did not have something to do with the deaths, because I just absolutely know that it did. If you can get the fluid out of the uterus, it is not going to do any damage, but here is the trouble: you can not always get it out and you have no way of knowing whether you are going to be able to get it out, until you put it in and try to get it out. I just simply can not get it out of all of them. I know if any one continues douching long enough, he is eventually going to have trouble. You are also going to lose some cases regardless of what method of treatment you use. I have never tried any of the flavines, such as some of the men spoke of, but if you can not get your fluid out, you are going to have trouble.

I might cite one instance where two cows in a herd freshened and retained the afterbirth. The herdsman called his veterinarian and noticed that these cows did not do well; they were douched after the afterbirth was removed and he came back after twenty-four hours and douched the cows again with normal saline solution. These cows immediately sickened. The herdsman became alarmed about it. He had at one time worked in a herd where I was taking care of the genital diseases of the herd and it occurred to him that the cows did not seem to get sick there the way they did here, and on the strength of that he wrote to me. I advised, "Do not douche the cows and you will find they will get along a whole lot better." That following week another cow retained her afterbirth and instead of calling his local veterinarian he removed that afterbirth himself and did nothing else. I was asked to go to this place, some four or five hundred miles from my home, about two weeks after this last cow had freshened. Her afterbirth had, as I stated, been removed by the herdsman, but no douching had been done. An examination of the cow at that time revealed the uterus almost involuted to normal size.

The two other cows, although they had freshened two weeks earlier, were eating poorly, were poor in flesh; they were going to live all right, but an examination of the genital tract revealed both uteri tremendously enlarged, sensitive and hard; a visit to that place six weeks later revealed one of the uteri with a fistulous tract leading from the rectum to the uterus, the uterus of the other was tremendously enlarged, with—I do not know how many—abscesses—just multiple abscessation of the uterus walls—and the cows still

showed the effects of having gone through a severe physical ordeal. With the other cow, where the herdsman had removed the placenta and no douching had been resorted to, I was able to pick the uterus up in one hand and there was no necessity for any other treatment whatsoever, and reports from that herd since indicate that this cow has conceived; the other two, of course, were incurably barren, and you can not make me believe that douching did not have something to do with making those two cows incurably barren, I have had the same experience with others. Do not misunderstand me. It does not happen in all cases, and I stated in my paper that the number of fatalities was probably in excess of what you would get if you used it in a number of cases, but you will get such results, at least that has been my experience, where I can not get the fluid out, and I do not know whether I can until I put it in and try to get it out.

BUREAU TRANSFERS

Dr. Ashley J. Clark (San Fran. '15), from Sioux City, Iowa, to P. O. Box 657, Roswell, New Mexico, on meat inspection.

Dr. H. F. J. Arundel (Cin. '19), from West Palm Beach, Fla., to P. O. Box 154, Bonifay, Fla.

Dr. L. M. Buffington (Cin. '11), from Ames, Iowa, to Des Moines, Iowa, on hog cholera control.

Dr. Otis R. Burket (K. C. V. C. '15), from Chicago, Ill., to Helena, Mont., on meat inspection.

Dr. Robt. J. Spain (Gr. Rap. '18), from National Stock Yards, Ill., to P. O. Box 844, Helena, Mont., on field inspection work.

Dr. Wm. G. Hart (Wash. S. C. '18), from Sacramento, Calif., to Fort Worth, Texas, on meat inspection.

Dr. W. F. Osborn (K. C. V. C. '08), from Pittsburgh, Pa., to Frederick, Md.

ANOTHER LITERARY GEM

Dr. N. S. Mayo, of the Abbott Laboratories, has forwarded a copy of another literary gem, received from a native of the Gold Coast, West Africa, a prospective customer—well, read it yourself:

Sir,

I have had much of you that, you are the most celebrated medicines maker; and such I would like you to send me a sample of learning pills please try and do it for me sir.

And a medicine, which makes a man or person to become stout, big and extra.

Good morning sir

And what do you do.

I am yours truly,

VISITORS AT THE JOURNAL OFFICE

During the past several months quite a number of out-of-town visitors have called at the JOURNAL office. The list includes: Drs. Thos. J. Mahaffy, of Jacksonville, Florida; S. E. Bennett, of Chicago, Illinois; V. A. Moore, of Ithaca, New York; H. H. Newcomb and Theo. F. Krey, of New York City; J. W. G. Hanson, of Greenville, Michigan; Ward Giltner, Richard P. Lyman, H. M. Newton, B. J. Killham and T. S. Rich, of Lansing, Michigan; R. H. Wilson, of Rochester, Michigan.

THE RESULTS OF MANUAL REMOVAL OF RETAINED FETAL MEMBRANES¹

By B. T. SIMMS, F. W. MILLER, and C. R. DONHAM

Oregon Agricultural College, Corvallis, Oregon

There seems to be a growing belief that undesirable results follow the manual removal of retained fetal membranes, but very little accurate data have been reported, which either confirm or contradict this belief.

In an experiment at the Oregon Station 55 consecutive retained fetal membranes have been removed, following the usual procedure. In 53 of these the operation was done as soon as the cases were called to the attention of the veterinary staff. In the other two the cows were seen in the afternoon of one day and the fetal membranes were removed the following morning. These 55 cases presented the various degrees of attachment which are usually found in such a series. Some were treated as early as the first 24 hours; others were as late as the fifth day; one case was treated on the seventh day.

These animals were in several different herds. It has not been possible to get complete data on all of them.

The relations of agglutination tests for infectious abortion and abortions immediately preceding the retained fetal membranes are shown in table I.

TABLE I—*Relations of agglutination reactions to abortions*

	NUMBER	ABORTED
Reactors.....	27	16
Non-reactors.....	12	0
Not tested.....	16	0
	55	

Subsequent records of these 55 animals are given in table II.

TABLE II—*Records subsequent to removal of placenta*

Deaths following removal of placenta.....	0
Sold to butcher or otherwise disposed of without being bred.....	10
Mated.....	45
	55

¹Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

The results of the 45 matings are shown in table III.

TABLE III—Results of mating.

	NUMBER	%
Conceived.....	36	80.0
Sterile.....	4	8.9
Mated too recently, etc.....	5	11.1
	45	100.0

It is of interest to note that four, or 22%, of the 18 reactors which were mated were sterile. The other nine reactors were disposed of without being mated.

ACKNOWLEDGMENT

Dr. D. M. Campbell, editor of *Veterinary Medicine*, has donated to the A. V. M. A. library copies of the annual reports of the United States Live Stock Sanitary Association for 1910, 1912, 1916, 1918 and 1919.

ON THE WAY TO PORTLAND



The Oriental Limited crossing the Mississippi River below St. Anthony Falls, Minneapolis.

THE HANDLING OF SOME OF THE SERIOUS ACCIDENTAL INJURIES COMMONLY MET IN HORSE PRACTICE¹

By R. R. DYKSTRA, *Manhattan, Kans.*

*Dean, Division of Veterinary Medicine, and
Professor of Surgery, Kansas State Agricultural College*

INTRODUCTION

The above mentioned subject was practically assigned to me by the Secretary of this Section. When I thought it over it did not take me long to find out that, if I were to follow the title closely, I would have to present to this Section an article which would compare in volume with some of our largest and most voluminous textbooks. I therefore decided that it would be better and of more value to those attending this Section if I discussed in a more or less general way only one group of the serious accidental injuries commonly met in horse practice. In accordance with this thought I am presenting to you a discussion regarding "Penetrating Wounds of the Plantar Surface of the Horse's Foot." This refers almost exclusively to the accidental penetration of the lower surface of the horse's foot by sharp pointed bodies, particularly nails. The members of this Association are fully aware of the fact that the point of entry of the nail has an important bearing upon the structures in the foot that may be compromised and the subsequent prognosis of the condition. In an attempt to clear up some misunderstandings and some disputed points, an effort will be made to discuss each of the various forms of penetrant wounds separately. Before doing this, there are certain general principles and certain general methods of handling which, in my opinion, apply to all cases of penetrant wounds of the foot, irrespective of their location.

In the general treatment I want to call particular attention to the advisability of administering a dose of tetanus antitoxin in all those cases where the owner is willing to pay the price. In our clinic we have made it a practice to inform the owner that there is grave danger that tetanus may develop as a result of wounds of the foot and that if he values his animal he should fortify its system against tetanus by an injection of 500 units of

¹Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

tetanus antitoxin. If the owner fully understands the situation but does not care to assume the financial obligation, with the result that the animal later dies of tetanus, the responsibility then rests with the owner.

In all penetrant wounds of the foot, where the condition is at all painful and where the owner desires to place the animal in service again as soon as possible, it is our custom to apply a shoe with a boiler-plate, detachable bottom. We constantly keep in our clinic a model of this shoe so that the owner may understand exactly what is needed. Our greatest difficulty in obtaining a shoe of this type is that the blacksmiths, instead of using boiler plate for the bottom, use some thin, soft metal, which is not sufficiently resistant to withstand the strain put upon it when the animal accidentally steps upon some sharp elevation in the roadway. In order that this shoe may be successful, it is imperative that the bottom plate be rigid and sufficiently strong to resist all assaults made on it by unevenness of the traveled surface.

I presume that a good many of my listeners have been called upon to treat the condition that horsemen commonly speak of as "gravel." I have no objection to the use of this term, but from the standpoint of the educator—I must constantly remind my students that they must not fall into the error committed by so many horsemen. The latter very commonly believe that a horse will pick up with its foot a piece of stone, which becomes wedged between the wall and border of the sole, finally working its way upward and emerging at the coronary border of the hoof. I know of no physical reason why a piece of gravel should violate the laws of gravity in this manner and pass in an upward direction. Personally I have never seen a condition of this kind. What I have seen is an injury to the bottom of the foot so that infection resulted, the original traumatism closed up, pus developed, and not being able to escape through the original wound it traveled in the direction of least resistance, which happens to be between the keraphyllous and podophyllous tissue, finally breaking out at the coronary border. I wish to repeat that I have no objection to the use of the term "gravel," provided the veterinarian does not fall into the error of believing that a piece of stone has actually traveled from the sole of the foot to its coronary border.

With a clear understanding of the general principles enunciated in the preceding paragraph, we are ready to take up the discussion of the penetrant injuries of the plantar surface of the

foot. In the following discussion, we commence with the minor injuries and then in regular order take up those of greater gravity.

INDIRECT NAILING

This term refers to pressure, by the horseshoe nail, against the sensitive tissues of the foot. The animal usually shows no symptoms of this condition immediately after it has been shod, but in the course of a few days after the shoeing, lameness gradually develops. A history of recent shoeing followed by a gradually developing lameness is always very highly suggestive of this condition. It is caused by the fact that the nail either did not enter at the white line, that it was misdirected, that it was turned the wrong way, that is, with the beveled point outward, or that the wall of the hoof is so broken down that it is impossible to drive the nail in any other manner than in close proximity to the soft tissues. A diagnosis of close nailing may usually be confirmed by carefully testing with the hoof-testers those points in particular where the recently driven nails have entered. There is distinct evidence of pain over the region of the offending nail.

The handling of the condition is comparatively simple and consists in withdrawing the nail causing trouble, cleansing the wound with some antiseptic such as tincture of iodine, and plugging up the nail hole with hard soap, beeswax, or other impervious material. The animal usually makes a very quick and uneventful recovery.

DIRECT NAILING

This condition is somewhat similar to the preceding excepting that not only is the nail driven close to the sensitive structures, but actually enters them. It usually involves the podophyllous tissue at the plantar border of the third phalanx and may even involve the third phalanx itself. This accident is discovered immediately after its occurrence. The animal jerks its foot away and there is an outflow of blood from the wound. If it is properly treated immediately after its occurrence, there are seldom unfavorable sequelae. Unfortunately the shoer has neither the knowledge nor the remedies to treat it properly and, therefore, at a later period infection develops with undermining of the sole and other complications. The treatment, if promptly applied, need consist of nothing else than cleansing of the wound, removal of loose particles of tissue, and the application of tincture of iodine or other suitable agent. It is also advisable to close the

entry of the wound so as to prevent contamination of its deeper parts.

PENETRANT WOUNDS OF THE HORNY SOLE

By the horny sole we mean practically all of the bottom of the horse's foot with the exception of the horny frog and its neighboring lacunae. The horny sole is probably as frequently the seat of penetrating wounds as any part of the body. The average farm yardway or country roadway is rather liberally strewn with sharp-pointed bodies of various kinds. In fact, it is rather peculiar that the horse is not more frequently injured in this way.

Immediately after the foreign body has penetrated the sole, the animal evinces pain, because the point of the foreign body need only penetrate the horny sole with a thickness of $\frac{1}{4}$ to $\frac{1}{2}$ inch in order to reach the overlying sensitive structures. If the sharp-pointed foreign body passes in a straight, upward direction, its course is soon interrupted by the very hard third phalanx. Occasionally it assumes a slanting direction and may then penetrate for some distance between the upper surface of the horny sole and the sensitive structures.

In conditions of this kind the attendant almost always makes it a practice to remove the offending foreign body immediately, and as it is not at all unlikely that all evidence of pain will disappear for a day or two following the injury, the point of entrance of the foreign body is forgotten so that finally when the animal again becomes lame, owing to the development of pus, the attendant is unable to inform the veterinary practitioner of the location of the original wound. From the standpoint of treatment it is highly desirable, in fact almost imperative, that the drainage opening be made at the point where the offending body has entered. In cases of this kind we have followed the usual custom of making from one to three exploratory openings through the sole of the foot, or until we locate the pus pocket. The exploratory openings are made in the region of the toe and one in each of the wings of the horny sole. If pus is present, it is almost always found by means of one of these exploratory openings.

Having found the pus pocket, it is drained, and the exploratory opening made sufficiently large so that future accumulation of pus is prevented. In this connection I wish to state that we have discontinued removing all of the undermined sole usually

found in cases of this kind. The reason for leaving some of the undermined sole is that the horny sole is undoubtedly the best protective dressing for the contiguous sensitive structures. We therefore remove only enough of the sole so that the deeper parts of the wound will be accessible to treatment.

PENETRANT WOUNDS OF THE HORNY FROG AND OF THE MEDIAN AND LATERAL LACUNAE

The above-mentioned heading refers to all those conditions where the penetrating body involves the horny frog, or plantar cushion, and the lacunae. In this particular condition the penetrating body does not enter deeply enough to involve the deeper structures of the foot.

The conditions under which these injuries occur, and the symptoms as well, do not differ materially from those discussed under the preceding heading. There is some difference in the treatment, because of the involvement of the plantar cushion. This latter structure may have undergone partial necrosis, or numerous communicating pus pockets may have developed in it. It is also a comparatively vascular structure so that the surgical handling of it should include steps to control unusual hemorrhage.

In those cases where there is rather extensive infection, it is best to remove all of the diseased tissue. If the operative interference must be at all extensive, it is our practice to anesthetize the area by means of an injection of a local anesthetic over the regional sensory nerves. A tourniquet should also be applied above the fetlock region, so that the bleeding will not confuse the operator and interfere with the proper performance of the necessary surgical steps.

Having determined by careful probing the extent of the involved tissue, the operator should boldly remove as much of the frog and plantar cushion as necessary to provide perfect drainage. In our clinic we usually make a funnel-shaped opening, with the wide part of the funnel near the plantar surface. It is our experience that wounds of this nature show a tendency to fill very rapidly with granulation tissue and therefore we make it a practice, after the operation is completed, to pack the wound with some antiseptic dressing such as 5% iodoform gauze. This is retained in position by bandaging and by the application of a plate shoe. If the wound seems to be progressing well, as evidenced by a normal condition of the patient, we leave the dressing in position for several days. If there is much evidence

of pain or other general disturbance in the course of 24 hours, the dressing is removed, the wound cleansed, and new dressing placed in position.

PENETRANT WOUNDS OF THE DEEP TISSUE OF THE FOOT WITH
INVOLVEMENT OF THE NAVICULAR BURSA, THE COFFIN
JOINT, AND NEIGHBORING STRUCTURES

In these conditions the penetrating body almost always enters in an area corresponding to the anterior two-thirds of the horny frog. The penetrating body passes through the horny frog, the plantar cushion, and the distal portion of the tendon of the deep flexor, frequently spoken of as the plantar aponeurosis. By passing through the structures mentioned, the deepest part of the penetrating body will have reached the navicular bursa. The latter structure is in reality but little more than a potential cavity. It therefore takes but little for the penetrating body not only to enter the navicular bursa, but pass completely through it and, in case it does so, the chances are that it will have entered the corono-pedal articulation. In view of the fact that the penetrating body almost always carries with it infective material, the conditions that develop are either septic bursitis, or septic arthritis. Of the two conditions the latter is by far the graver. In a measure, we must look upon a bursa, and in particular a joint cavity, as a space from which absorption of toxins is rapid, and on account of the size of the absorbing surfaces, voluminous. This explains, in a measure, the clinical symptoms. The ordinary nail punctures do not usually give rise to the intense and persistent symptoms observed when there is an absorption of toxins from the navicular bursa or from the corono-pedal articulation. In fact, it may be stated that the intense hyperthermia, when associated with penetrant wounds of the foot, is rather characteristic of septic bursitis or septic arthritis. Accompanying the hyperthermia there are all the other symptoms of systemic infection. In the later stages of this condition when, as so frequently occurs, neighboring structures are involved in the necrotic and gangrenous processes, the severity of the symptoms is greatly increased.

Following proper treatment, the prognosis of septic navicular bursitis is much more favorable than that of septic corono-pedal arthritis. In the cases that have been presented at our clinic, we have been unable, clinically, to distinguish between the two conditions. Outside of the prognosis, it is really not of importance

to distinguish between them, because the treatment is similar. We therefore make it a practice to proceed with the necessary surgical steps and when these have advanced sufficiently, and we find that the condition involves the articulation, we can then inform the owner that the prognosis is very much more grave than originally believed.

Stating it simply, the handling is based upon a broad surgical principle, which is that whenever a body cavity is infected, we must provide an exit for the septic material, removing all diseased tissue, and attempt to sterilize the wound. Now, in order to obtain the conditions outlined under the heading of general principles, we must follow a rather careful technic and be thoroughly versed in the anatomy of the structures.

It is almost superfluous to state that the animal's foot, always a badly infected member, must be rendered as surgically clean as possible, and therefore the foot is subjected to a thorough preliminary cleansing with soap and water. This is followed by washing with denatured alcohol so as to dissolve and remove adherent fatty material. Following this, the entire foot is enveloped with a layer of cotton impregnated with a suitable disinfectant. A leather boot is applied to retain the dressings.

In 12 to 24 hours, the preliminary dressing is removed, after the animal has been either cast or placed on an operating table. The foot is again subjected to the most rigid cleansing. Instruments are thoroughly sterilized and every known surgical precaution should be taken. In order to control hemorrhage, a tourniquet is applied above the carpal or tarsal articulation. In order to control pain, nerve blocking is resorted to by an injection of a local anesthetic over the regional sensory nerves. If this injection is properly made and the dosage of anesthetic correctly gauged, it is possible to render the operative area practically insensitive.

The horny sole is to be thinned in such a manner that it practically retains its original thickness in the region of the white line, but is almost completely removed where it joins the horny frog. The anterior two-thirds of the horny frog and the plantar cushion are to be removed entirely, by making through these structures a transverse incision at right angles to their general direction and corresponding to an imaginary transverse line dividing the posterior from the middle third of the frog. After the removal of the above-mentioned structures, the distal portion of the tendon of the deep digital flexor is exposed. It is not

infrequently necrotic. The surgeon must remove not only all necrotic tissue, but he must also cut a window through the tendon so as to open freely the navicular bursa. In the latter, all diseased tissue must again be carefully removed. It is equally important to avoid unnecessary interference with the normal tissues.

If, after the last step, the operator finds that the penetrating body has passed through the structures separating the navicular bursa from the corono-pedal articulation, he must then continue with his opening so as to provide for the exit of septic material from the joint. In these latter cases, prognosis is exceedingly unfavorable.

After the proper surgical steps have been taken in either septic bursitis or septic arthritis, the wound may be carefully cleansed and packed with 5% iodoform gauze, all of which is to be retained in position with an appropriate bandage and a leather boot or plate shoe.

If the animal was actually affected with septic bursitis, it is really surprising how quickly it will respond, by an improved condition, to the evacuation of septic material from the bursa. The hyperthermia subsides and the other general manifestations of septic infection also disappear. Of course the local sensitiveness in the operative wound may remain for some time.

The after-treatment is purely along general lines. If the general condition of the animal remains good, it is advisable to leave the dressings alone. If the temperature goes up, or if the dressings become badly saturated with wound secretions, it is better to cleanse the wound and renew the dressings.

In this paper we have covered in a more or less general way only one group of the accidents with which the practitioner is frequently called upon to contend. To the layman it is no more than a nail puncture. He is not qualified to understand the difference between the comparatively harmless indirect nailing and the very serious septic corono-pedal arthritis. The responsibility therefore falls upon the practitioner. He should exercise every possible precaution, and insofar as is humanly possible he should not leave his patient until he has satisfied himself that he has done everything he can to discover the true nature of the ailment and applied every step known in veterinary surgery.

DISCUSSION

DR. H. B. TREMAN: I listened with very much interest to the paper by Dr. Dykstra and it seems from the way he covered the subject, that it doesn't leave very much for any one else to say.

In discussing the wounds of the foot, as we find them in general practice, there is much to learn, and I thought perhaps I might deviate just a little from the way Dr. Dykstra took up the paper and say just a word in regard to the diagnosis of this sort of lameness on the start.

We will grant that we have located the lameness in the foot. As the horse is led away from us, if the pus pocket or whatever it may be is located in the toe or near there, we will find the animal stretching out or extending the foot well in front of him, perhaps placing the heel on the ground first, or in other words the anterior phase of the stride is very much extended while the posterior phase of the stride is very much shortened. In fact, when the wound is in the foot the horse may even walk on the toe or knuckle over. If the wound is well toward the outside of the foot, the foot will be placed on the ground well away from the body, in a state of abduction, or, if the opposite is true, it is well toward the median line, or in adduction. I enjoy trying to make these distinctions to find where the wound is, before I pick up the foot. It is a lot of satisfaction sometimes if you can tell the owner that the wound perhaps is something that has entered the foot in the region of the toe and then pick up the foot and show him.

One of the first troubles mentioned was gravel—so-called. Well, we now have quite a lot of graveled roads in our country but I can not see that there are any more graveled horses than there used to be when they were all dirt roads.

One of the most satisfactory methods that I have found, in taking care of the so-called gravel, after the pus pocket has been located, is to cut out with a pair of sharp hoof-nippers, and a hoof-knife, a section of the wall, no larger than is necessary, directly over pus tract. Depending on the length of the foot you can go anywhere from one-half of an inch to an inch or more right up the wall. This gives much better drainage for the pus that has accumulated there and, besides that, the wound is all on the upper part of the foot or away from the ground. If it is necessary, as it often is, to put the patient at work as soon as possible, you can apply a shoe immediately, if there has been enough of the sole removed so as to leave it open, put a leather on, and put the horse to work almost immediately, and all the after-treatment is applied from above the shoe, with the foot resting firmly on the ground, and, in fact, the after-treatment amounts to almost nothing.

In regard to the paraphernalia that a good many veterinarians have, or rather do not have, for treating foot cases in the country. I think the principal instrument is a hoof-knife, with short blade, and good heavy handle, but have the blade as narrow as possible at the point, and along with that I always carry a small, three-cornered file, so that I can keep my knife in perfect condition. I am entirely too lazy to operate with a dull hoof-knife. Then, besides, I think it very essential always to carry a pair of sharp hoof-nippers.

In speaking of removing a piece of the wall, that applies also to a nail puncture near the white line, anywhere within half an inch to an inch back from the white line, you can open that up, especially if the pus has burrowed out to the white line; you can remove a small section of the wall and apply a shoe with the leather and the entire after-treatment is made from the top of the shoe as before.

We are frequently called for these cases immediately after the injury is made and, on account of the extreme sensitiveness of the inner structures there, as well as the abundant supply of blood, it is sometimes quite difficult to open the wound thoroughly, to give it sufficient drainage and cleansing—we always assume, of course, that this was an infected wound, right from the start and the easiest method I have ever found for that is the actual cautery. If you do not happen to have a thermo-cautery around, a suitably shaped piece of iron, heated in the kitchen fire or in a little fire built outside, will serve and you can make the wound as large as you want and as deep as you want and can be assured of perfect disinfection.

Another condition that I believe the Doctor did not mention, which I have found a number of times, and is quite serious, is a fracture or breaking off, we will say, of a small portion of the edge of the os pedis with a deep nail puncture. I have found this condition a number of times. It is quite essential for an

early diagnosis to be made; if not, when the wound becomes infected, this loose piece of bone will not unite in its original place and is simply a foreign body. If it is not recognized, the wound will discharge quite copiously for a number of days or weeks and cause a great deal of suffering on the part of the patient and worry and annoyance to both the owner and veterinarian. If it is given time enough and the opening in the sole is large enough, of course this piece will usually slough away. If discovered, of course a late diagnosis is made, but if you do not happen to see that piece of bone when it comes out, the patient will, of course, recover without a correct diagnosis and, perhaps, some new antiseptic is given the credit for it. In such a case, it is necessary that this loose piece of bone be immediately removed. It can usually be diagnosed by careful probing. It is usually necessary to cast the patient and cut down and open the place sufficiently to take out this loose piece of bone, and here, too, I find it is quite convenient to remove a piece of the wall, a little larger than before, and within a short time you can put on a shoe and the after-treatment can be applied above the shoe as before.

There is one thing more that I wish to mention, and that is a convenient way of applying a temporary dressing after any of these minor wounds of the foot. I always carry a few horseshoe nails of varying lengths, and after the wound is opened and ready for dressing, just drive a few of these horseshoe nails into the wall from below out, and after your dressing is applied, bend the nails over it. When redressing is necessary, these nails can be raised slightly, the new dressing applied and nails bent over as before.

DR. P. L. CADY: I want to compliment Dr. Dykstra on the essay he has given us on the treatment of penetrant wounds to horses, and I will make my discussion pretty short, I assure you. In fact, I am not going to try to take away from anything Dr. Dykstra has said, but just to enlarge especially upon his statement that we should be careful and inject tetanus antitoxin at all times if it is indicated in the least.

Hemenway, in his *Veterinary Law*, tells us that the veterinarian is liable for damages to the extent of the value of the horse should he fail to apprise the owner of the impending danger of tetanus following the penetrant wound.

I carry a set of hoof testers to assist me in locating the sensitive spot on the horse's sole. I find that it expedites matters quite considerably and is a very efficient way of locating the point of puncture.

A condition that causes considerable trouble in these penetrant wounds is caused by the invasion of the *Bacillus necrophorus*. It is a condition that requires more than ordinary surgical procedure, in fact it takes a very heroic treatment to combat this condition.

We aim to clean the foot to get rid of all the infected material as near as we can and use some very caustic astringent material to help finish up this job. We like the ordinary white lotion, with about two drams of copper sulphate to the pint; make a wet pack of this mixture and cotton, and bandage it in place.

In the treatment of infected navicular bursa, we all operate pretty much alike, only I have been, in the last few years, making myself believe I had a little better results than ordinarily, by employing these dyes; I have been using flavisol to saturate gauze for my pack. I inject it into the wound and dress it often. It seems to relieve the pain very quickly and I think we get better results that way than we have been able to get before.

In country practice I am unaccustomed to using the shoe and boiler plate, so we have had to adopt a bandaging process with a burlap sack. It answers very nicely.

In concluding I just want to say that the big thing, in my mind, to bring all of these penetrant wounds to a successful termination, is to see that they are sealed as soon as you possibly can after the lameness has disappeared. Soap or paraffin or beeswax is all right. We prefer just ordinary pine tar.

DR. JAMES ROBERTSON: I just want to say a few words in regard to what this Association has done for the advancement of scientific horseshoeing. It is necessary to go back a few years, to 1892 or '93. Prior to that time the veterinarians had no opportunity of learning anything very much about scientific shoeing.

I want to compliment the essayist on this splendid exhibit that he has given here; it is the only one I have seen in a great number of years in regard to

that very important subject, and there is not a word of criticism. I want to emphasize the statement he made and say that in my mind it would be almost criminal negligence for any man to treat the wound of a horse's foot without first giving a dose of tetanus antitoxin. I believe I used the first dose brought to Chicago, and from that day to this, wherever there was a wound that was inaccessible, that is, almost impossible to keep clean, that horse always got a dose of tetanus antitoxin.

I want to tell you something of what this Association has done that is unique in history, in regard to the advancement of scientific horseshoeing. Prior to 1893, when I was attending veterinary college, I had been a practicing horseshoer up to that time and ran quite a large shop in the city of Chicago. I was very much surprised, when the lecturer at the college gave out the impression, in fact he quoted an old saying of Prof. Dick of the University of Edinburgh, that the ordinary horseshoer didn't know any more about the construction of a horse's foot than a block of wood. Well, of course that was probably meant as a joke, but it was serious, as the students who went out from that institution naturally were under the impression that this was practically so, with the result that it caused a little feeling between the veterinarian and the horseshoer. Of course the majority of them did not know very much about the structure of the horse's foot but the veterinarian at the same time had not had very many opportunities to learn anything about scientific horseshoeing, so it was a double-header in that respect.

After graduating from the college we thought up a plan whereby both might be benefited. I immediately corresponded with the presidents of all the colleges and universities in the country, in regard to a movement of that kind for the education of the horseshoers in this country. At that time there was only one institution, the University of Pennsylvania, that had been giving lessons in scientific horseshoeing, so the presidents all gave their consent and the matter was to be brought up before the Association, at the convention in Buffalo. We brought the matter up there and naturally there was quite a little hostility on both sides; the practitioner thought it would make quacks of the horseshoers, and the horseshoer thought that he was posted enough, that there were very few people who could give him any practical information on the subject, so you see we were practically between the devil and the deep sea. But we got the hearty cooperation and we will never forget it, the horseshoers will never forget it as long as they live.

The late Dr. W. Horace Hoskins, as Secretary at that time, made a splendid speech in favor of the idea. The next one was Dr. John W. Adams, of the University of Pennsylvania; he also favored it, and Dr. Harger, all of that University, and that was the only institution in this country at that time that did give teaching in scientific horseshoeing.

The movement was carried on to success for about four or five years. Schools were established in all the large cities of the United States and we predicted what came true, although we were somewhat in doubt ourselves, that instead of the horseshoers becoming quacks they realized their own ignorance in regard to the ordinary care of wounds at that time, and we had far less of the horseshoeing veterinarian, and to this day the institution has kept up, to a certain extent, that same principle, so that there is far less trouble between the horseshoer and the veterinarian.

Dr. Adams also sent out a book at that time that was used as a text-book in all the states and is being studied very largely by the horseshoers of today.

In regard to the exposition that has been given here there is very little I could add. There is one thing to which I want to call your attention and that is the fact we now have very little of these punctured wounds, on account of the adoption of the rubber and other pads.

There is one thing to which I would like to call your attention. It probably has not been spoken of, in regard to the horse pulling off the shoe and stepping back on a nail; it would be almost impossible, from the many nail-holes that would be in the foot, for a person to tell whether that horse had stepped back on a nail or not, within three or four days.

Now, gentlemen, I thank you for this little opportunity I have had to bring to your mind the work done by the old members of the Association, in furthering the cause of education of horseshoers and veterinarians alike in this country.

CHAIRMAN CALDWELL: I think we owe Dr. Robertson a vote of thanks for bringing up the subject and discussing it here this morning. There are few men remaining in the profession who still like to discuss the horse and subjects pertaining to it.

DR. JOHN W. ADAMS: I want to say only a word or two. I was very much interested in what has been said and I agree with almost all of it. There are one or two things, however, that I would like to call to your attention. In making a diagnosis of penetrant wounds of the pododerm, or any injury that causes inflammation of any part of the pododerm, such as a corn, a bruised sole, penetrating street-nail or quarter-crack or toe-crack, local inflammation of the pododerm backs up the blood in the plantar artery in the front leg and if, on palpating the metatarsal artery of the hind leg, you find it distinctly distended, you know that there is distention of the capillaries in the pododerm somewhere. That is an important point. I first test the volume of the plantar artery in the front leg, and the metatarsal in the hind, as a routine procedure.

Then another thing: Remember that in septic inflammations of the pododerm, the exudate is not creamy and thick, like pus, but thin and in black hoofs contains a few pigment cells. It tends to mount on the surface of the fleshy leaves, separate the coronary band from the coronary groove, and the perioplic band from the perioplic groove, and then run down the outside of the foot. This is aseptic and such an aseptic process needs no bottom drainage because it is aseptic. Suppurative processes always need bottom drainage. A suppurative process in the velvety tissue always spreads with equal rapidity in all directions from the wound to the center, whereas a suppurative process on the fleshy leaves always runs lengthwise with the fleshy leaves, and spreads very little forward and backward.

In the operation for resection of the perforans tendon, the Doctor outlined the old method that I followed for many years, but it is entirely unnecessary to cut away any of the frog; you can thin the frog down until you begin to get pin-point bleeding from the ends of the villi and then by cutting underneath the frog you turn the frog back. You can cut back as far as the buttresses if you wish to, put a bandage around it, turn the frog back and resect the tendon underneath, then lay the frog down and you have a normal frog clear to the point, whereas, if you cut off the frog after this method, you never have a normal frog horn at the point, because that horn at the point is produced by an extension of the velvety tissue of the sole and it produces sole, so you have the end of the frog made up of the horn of the hardness of the sole, and that, as I say, is entirely unnecessary.

Another thing I did not hear the Doctor bring out is that after resection of the perforans tendon, the cicatricial tissue—that is the granulation tissue which becomes the cicatricial—is never quite as strong as the original tendon tissue and we wish to gain all the area for its attachment that is possible. If we do not remove the cartilage from the under side of the navicular bone, it never unites with that tissue, so it is well, it is proper, during the operation, to remove all the gliding cartilage from the underside of the navicular bone by using a hoof-knife lengthwise with the tendon, then the granulation will spring from the bone and fuse with the granulation elsewhere, and you have obliterated, of course, the navicular sheath and gained an additional area for attachment of your tissues. Of course, after that horse is healed, in the course of nine or ten months his foot will stand a little upright. That cicatricial tissue, like all cicatrices, will contract and raise his heel a little, so that that horse will eventually stand perhaps ten degrees higher on that foot than the other one.

CORRECTED

Doctor: "Now, madam, you must really chew your food more. What were you given teeth for?"

Patient: "Pardon me, doctor; they were not given to me; I bought them."

AUTO-INTOXICATION OF ADVANCED PREGNANCY¹

By OTTO MENIG

Four Lakes, Wash.

In the presentation of an article with this title, I fully realize that I am treading on dangerous ground; but since I am not attempting to convey the impression that I have not freely laid hand upon the lines thrown to me by the various workers in the different fields of science, and since I am only inviting you to take with me a reflective glance over those experiments which have led to a fuller realization of the fact that the last word pertaining to the auto-intoxication disturbances has not been spoken, then the little excursion to the outer rim of knowledge does not seem so dangerous.

Ever since there has been such a thing as a recognized veterinary profession, several of its followers have devoted to the problems of auto-intoxications of advanced pregnancy what others have thought was an altogether disproportionate amount of time and energy; but since it is a fact that much of the knowledge pertaining to this condition is being swept into the discard by a series of discoveries that have been made since the turn of the century, it might not be too presumptuous to consider the relationship of those recently developed facts to the popular conceptions regarding the auto-intoxication disturbances of advanced pregnancy of the bovine female.

It might be thought that the past century, with all of its wealth of science, would have by this time completely eradicated all traces of superstition regarding this group of disturbances, but experience indicates that we are receiving a rude awakening to the fact that we are just in the infancy stage of an understanding of the various factors involved in the causation of the auto-intoxication of advanced pregnancy.

Until recently, it was not possible to compile data on the subject of the auto-intoxications of advanced pregnancy to command serious consideration, but the experimental studies which have been conducted in recent years have developed a number of important and clearly defined conclusions.

Those who have experimented extensively with the auto-intoxications of advanced pregnancy of the bovine female assert

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that the bulk of evidence is distinctly in favor of the belief that the metabolic processes which are associated with high lacteal production are the essential predisposing causes of the auto-intoxications that are associated with the terminal period of pregnancy.

The complexity of the subject of the relationship of highly specialized activity to the auto-intoxication disturbances and its immensity of detail precludes but a superficial skimming-over of the subject at this time; but it is plainly evident that failure to comprehend this relationship, and to heed the fundamental facts arising out of that relationship, was one of the conspicuous faults of our veterinary ancestors.

The most significant fact pertaining to the auto-intoxication disturbances that associate with the terminal period of gestation is that liberal milk production, on common practical rations, fed in quantities to maintain the animal's body weight, is frequently accompanied by consistent losses of essential minerals from the animal's body.

CONDITIONS SURROUNDING DECALCIFICATION

The effect of the losses of the body reserves is observed most noticeably under those conditions which tend to accentuate them. Thus, the evidences of decalcification are most common in those bovine individuals that have gone through a season of high lacteal production; in those that are living under the influence of a markedly artificial environment, and in those that are forced to subsist upon restricted rations.

The practical significance of the mineral losses which characterize the auto-intoxications of advanced pregnancy is thought to lie in the fact that, even though relatively small, they signify just so much decrease in the capacity of the animal to meet further like demands, and that they may come to possess added significance when the vascular system is depleted of its blood subsequent to the filling of the udder during the several days just preceding the termination of pregnancy.

Clinical experience indicates that the auto-intoxications of advanced pregnancy are characterized by an increased excretion of ammonium compounds at the expense of urea, and this, in turn, indicates that the primary predisposing factor in the causation of this disturbance is an acidosis.

The necessity of considering such factors as acidosis and the mechanism of acid neutralization indicates how complex the

problem of auto-intoxication of advanced pregnancy really is, and how necessary it is that the relative importance of these various factors be clearly exposed.

The main facts in physiology regarding the acid and alkaline mineral elements are that the minerals enter the living body mostly as salts of sodium, calcium, potassium, and magnesium, and after performing a function entirely out of proportion to the amounts in which they appear, they leave the body.

It is unnecessary to dwell upon the necessity of the constancy of the reaction of the body fluids further than to relate that all of the various chemical reactions of the living animal, which constitute the basis of life, are extremely sensitive to slight alterations in the reaction of the body fluids.

IMPORTANCE OF ACIDITY AND ALKALINITY

The vital reactions taking place in the bodies of animals require that certain necessary conditions be maintained, and none of these conditions is of greater significance to the vital processes than the state of the body fluids as regards acidity and alkalinity.

The cause of the approximate neutrality of the body fluids is largely the result of the physico-chemical equilibrium between the carbonic acid, sodium bicarbonate, mono-sodium phosphate, and di-sodium phosphate contained therein and maintained largely by the excretory capacity of the kidneys and the lungs.

When acids enter into the body fluids, an immediate reduction of the bicarbonate follows, and when the bicarbonate deficit continues to exist, a corresponding depletion of the bases of sodium, calcium, potassium, and magnesium accompanies the decalcification process.

It has been shown that the quantity of the ammonium salts in the urine is to be regarded rather as an indicator of an excessive quantity of acids in the body. The ammonia normally formed in metabolism, instead of being transformed into urea, combines with the excessive acid, and is excreted by the kidneys as the ammonium salts of those acids.

The usual measure of acid excess in the body fluids, then, is the ammonia and ammonium salts in the urine, and it will be seen that excessive quantities of ammonia and ammonium salts in the urine is an indication of the fact that the body has been well depleted of its essential mineral reserves. Thus, it is seen that not only the important buffers of the blood and the bases

of sodium, calcium, potassium, and magnesium are used for the purpose of acid neutralization, but that finally the ammonium mechanism of acid-neutralization is called into play.

Observations on pregnant bovine patients indicate that the auto-intoxication of pregnancy is most apt to occur during the terminal period of gestation; that the susceptible animal is not able to maintain the body's mineral reserves, and that such an animal passes only a small amount of a highly concentrated urine which contains abnormally high percentages of ammonia and ammonium salts.

Starting with the fact that only a small amount of a highly concentrated urine is passed during the several days preceding the development of the evident manifestations of the auto-intoxication of advanced pregnancy, it is evident that the alkalinity mechanism of the animal's body is placed under a heavy load and, as a result, the animal's vitality is reduced.

URINE SECRETION DIMINISHED

Since one of the most conspicuous manifestations of the auto-intoxication of advanced pregnancy is the diminution of excretion of urine during the several days preceding the first evidences of nervous dysfunctioning, we should first consider this fact in its relationship to decreased blood-pressure.

Experimentors inform us of the fact that as a rule the quantity of urine excreted varies directly with the quantity of blood that flows through the kidneys. Whenever more blood flows through the renal structures, therefore, the amount of urine is increased. Further, it has been conclusively shown that if the quantity of blood that flows through the renal structures be markedly reduced, a small amount of a highly concentrated urine is excreted.

The various factors which have been in operation during the period of gestation and which serve as causative factors in the reduction of blood-pressure are the direct result of two chief causes: (1) the heart and vaso-constrictor muscles have lost their tone because of the effects of demineralization, and (2) the volume of systemic blood has been greatly reduced because now about one-eighth of the body fluid is in the udder.

The blood-pressure in the larger arteries is dependent mainly upon three factors: (1) the amount of blood pumped into the arteries by the heart, (2) the resistance offered to the escape of the blood from the arterial system, and (3) the volume of fluid

in the arteries at any given time.

If the arteries are fully dilated, as in the auto-intoxication of advanced pregnancy, it is absolutely impossible for the heart to maintain the pressure, for the relatively small quantity of blood could not properly fill the arterial system.

In support of the statement that the auto-intoxication of advanced pregnancy of the bovine female is characterized by widespread vascular dilatation, decreased blood-pressure, renal under-functioning, and a subsequent retention of toxins, I refer to any case of parturient collapse.

The following is a brief account of the experiments that I have conducted upon bovine patients with the hope of testing the above generalizations and, perhaps, yield a new crop of facts.

Starting with the facts that only a small amount of urine was passed, and that the blood-pressure was exceedingly low, my

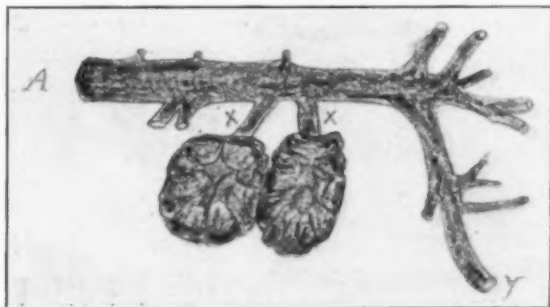


FIG. 1. A—Abdominal aorta, with its branches in the bovine female; XX—Renal arteries; Y—Mammary artery. (Compression of both mammary arteries at the point "Y" will give relief from parturient collapse, providing that the compression is complete. While the application of compression clamps to the mammary arteries gives satisfactory relief from parturient collapse, yet it must be remembered that such a method is not practical, except for the purpose of experimentation. Gradual compression of both renal arteries in the bovine female in advanced pregnancy induces collapse of a type that simulates parturient collapse, providing that the subject of experimentation is a "likely candidate." The "likely candidate" is one that has gone through several seasons of highly specialized activity at lacteal functioning, and one that shows more or less evidence of the existence of decalcification processes.)

attention was directed toward the relationship of blood-pressure to renal functioning and, therefore, I attempted by various means to regulate the capacity of the renal arteries.

The most effective means at my disposal for the purpose of regulating the capacity of the renal arteries consisted in the application of compression clamps to those arteries. The clamps used in the following experiments were composed of aluminum, and were constructed like a hinge. When these clamps were applied to the arteries, any desired degree of compression could

be exerted, and the capacity of the renal arteries fully regulated.

The first likely candidate that was presented for the purpose of experimentation was an aged "creepy" cow that was in advanced pregnancy, and that had gone through several seasons of high milk-production.

The animal was confined in the standing position, laparotomy was performed, the clamps were applied to both renal arteries, and then the animal was treated as an ordinary laparotomy case.

During the first two days following the application of the clamps to the renal arteries, this animal showed considerable evidence of "shock," but the excretory organs were functioning quite normally.

After the evidence of "shock" had vanished, the animal spent several days at comparative ease, eating and drinking freely,

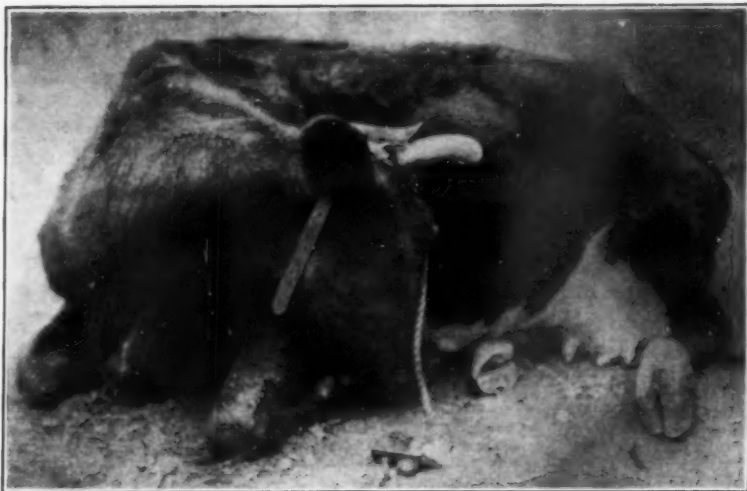


FIG. 2. Characteristic posture assumed by pregnant cows that have the compression clamps applied to their renal arteries.

and excreting sufficiently. On the morning of the seventh day, however, she began to show evidence of the fact that the clamps were beginning to function at their renal artery position. The animal became restless, showing considerable excitement; began to tread with the hind feet; the legs gradually becoming more unsteady, until finally they were unable to carry the load, leaving the animal prostrate.

During the thirty-six hours following the first evidence of the fact that the clamps were functioning at their position on the renal arteries, this animal passed through all stages and grades

of nervous misfunctioning from that of excitement to that of deep coma. She bellowed occasionally, moaned and groaned like an animal suffering from parturient collapse in the advanced stages and, finally, on the morning of the ninth day, she fell to the floor and was unable to rise. Up to the sixth day of the experiment, this animal seemed to be excreting sufficiently to maintain life, but during the next twenty-four hours only a small amount of urine was passed, and from that time until the termination of the experiment, only one-half pint of urine was excreted.

In that this subject showed every manifestation which characterizes parturient collapse, I decided to treat her with the method that is in vogue. The clamps were quickly removed from their



FIG. 3. A calf that had the clamps applied to its renal arteries at the time the photograph was taken, showing the calf in a state of deep coma. (It will be noticed that this animal did not assume the posture which usually characterizes parturient collapse.)

position at the renal arteries, the udder was inflated with air and the rectum was irrigated with a warm sodium chlorid solution. The animal made an uneventful recovery from the artificially induced parturient collapse, and she was able to stand on her feet in five hours after having been in the state of deep coma.

The above experiment was conducted about fifteen years ago, and from that time to now I have applied the clamps to the renal arteries of eleven different bovine subjects, five of which were aged cows that were in advanced pregnancy; one was an aged "creepy" bull; one was an open heifer; one was a steer, and three were young calves.

While all of the various animals in the above mentioned experiments developed evidences of intoxication as a result of the application of clamps to their renal arteries, yet only the five pregnant cows and the aged "creepy" bull developed the

typical manifestations of parturient collapse. The experiment in which the aged bull was the subject was particularly interesting and instructive because of the fact that he developed as typical a train of symptoms of parturient collapse as any one has ever seen.

I infer from these experiments that the existence of acidosis is an essential predisposing factor in the causation of the auto-intoxication of advanced pregnancy, and that it depends for its active cause on under-functioning of the renals. The practical significance of these experiments is that we now know better than ever before the importance of the relationship that exists between



FIG. 4. The same animal as in figure 3, two hours after the clamps were removed. (Removal of the clamps and the intravenous injection of a balanced salt solution brought about the change.)

blood-pressure and renal functioning, and the magnitude of the relationship that exists between renal functioning and the auto-intoxication disturbances of advanced pregnancy.

Further, these experiments naturally lead to the establishment of the theory that parturient collapse has for its predisposing cause the demineralization processes which associate with seasons of high lacteal production, and the lowering of the arterial blood-pressure subsequent to the filling of the udder with blood, for its active cause.

Clinical experience indicates that the mammary arteries undergo a marked dilation during the several days just preceding

the termination of the period of gestation. This dilation of the mammary arteries allows the udder to fill with blood and, as a result, there is a depletion of the quantity of blood in the systemic arterial system.

The idea that the auto-intoxications of advanced pregnancy that should have been eliminated by the various excretory organs, and would have been eliminated from the animal's body if the blood-pressure had been maintained, is thoroughly substantiated by the application of the compression clamps to the mammary arteries.

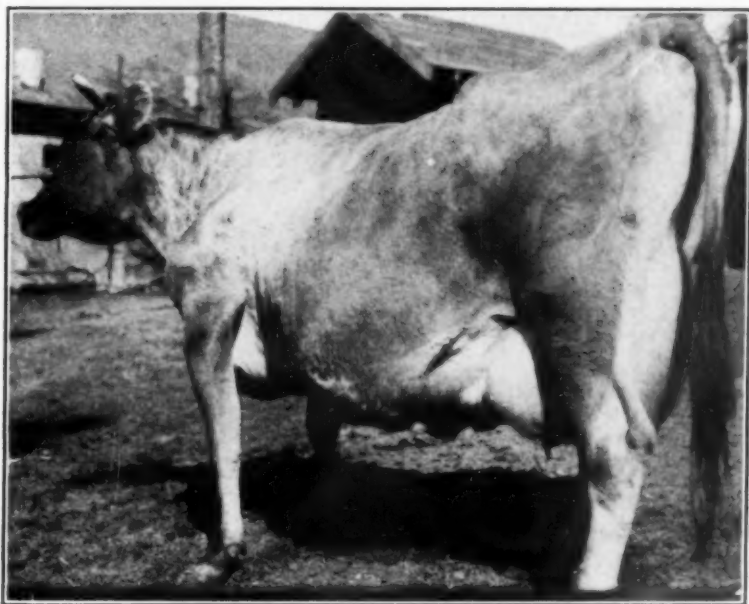


FIG. 5. A likely candidate for the artificial induction of collapse by means of the compression clamps. (Notice the conformation of the shoulders, and the general existence of the evidence of decalcification of the skeletal structures.)

In order to substantiate the correctness of the conception that the auto-intoxications of advanced pregnancy are the direct result of the lowered blood-pressure subsequent to the filling of the udder just preceeding the termination of pregnancy, I conducted an additional number of experiments.

The first experiment was conducted on a patient suffering from parturient collapse, and consisted in applying the clamps to both mammary arteries in such a manner as to prevent any blood from flowing through those vessels. The result was a rapid

recovery from the collapse, and the manifestations of recovery simulated those which follow induced intramammary pressure.

To date, I have used the clamps on the mammary arteries of nine different subjects that were suffering from parturient collapse and the results were as consistently satisfactory as those which follow induced intramammary pressure.

While the application of the compression clamps to the mammary arteries gives satisfactory relief from parturient collapse, yet it must be remembered that such a method is not practical except for the purpose of experimentation. The functioning of the clamps, as applied to the mammary arteries, however, demonstrates that induced intramammary pressure functions only as a factor to increase arterial blood-pressure.



FIG. 6. A likely candidate for the artificial induction of collapse by means of the compression clamps. (Notice the conformation of the back.)

Our problem thus being analyzed in a general way, the important practical question which confronts the practitioner of veterinary medicine is: What therapy can be offered for the relief of the auto-intoxication disturbances of advanced pregnancy?

Recent experiments indicate that if certain alkalis be administered to patients excreting excessive quantities of ammonia and ammonium salts in the urine, the excessive excretion of ammonium compounds diminishes, and the excretion of urea correspondingly increases, and those who have experimented extensively with the auto-intoxications of advanced pregnancy assert that alkali therapy seems to be of distinct service in restoring the normal functioning of the various excretory organs.

The problem which presents itself as being most intimately

associated with the proper and adequate therapeutic applications to cases suffering from auto-intoxications naturally resolves itself into the matter of selecting those agents which will re-establish the normal chemical equilibrium of the essential body fluids.

Therefore, we may lay it down as a general maxim that alkali therapy is invariably indicated in all of the various auto-intoxication disturbances of advanced pregnancy that are characterized by the excretion of an abnormally small amount of a highly concentrated urine.

Since the time of my first attempts at the artificial induction of parturient collapse, which is now about fifteen years ago, I have experimented extensively with parturient collapse, but since many of those experiments were not pure, I hesitate to draw conclusions other than to say that these experiments fully indicate that parturient collapse is an auto-intoxication of advanced pregnancy and that, for practical purposes, we may group all of the various conditions of advanced pregnancy that are characterized by convulsive, epileptiform and paralytic seizures that come on prior to, during, or after parturition, into one great group.

The practical significance of these experiments is that we now know how to induce parturient collapse by artificial means, but the thing of greatest importance is that these experiments afford a peculiarly characteristic illustration of the almost indispensable advantage of the ability to reproduce the auto-intoxications of advanced pregnancy at will and, further, they plainly indicate that the cause and the proper and adequate therapeutic procedure were unknown until the "sun of biochemistry" shed its beams over the world.

RABBITS MENACE FRUIT TREES

The increased number of rabbits this year all over Ontario is threatening to become a menace to fruit trees. It is reported that in Perth County the rabbits are the worst, as a new large species has appeared.

LIKE THE SURGEON AND THE SPONGE

A tourist motoring from San Francisco to New York stopped at a Kansas garage to have a tire repaired. It lasted only 15 miles. The garage man had left a six-inch steel chisel inside the casing.

THE ESSENTIALS OF MODERN MILK CONTROL¹

By GEORGE W. GRIM, *Milk Control Officer,*

Associated Suburban Boards of Health, Ardmore, Pa.

Probably no food supply is more essential to the human race than milk. Nutrition experts tell us that for the attainment of proper health a quart of milk per capita daily is required. In the United States the present per capita consumption of milk slightly exceeds eight-tenths of a pint. While the increase in milk consumption has been remarkable during the past ten years we have not yet approached the per capita consumption figure of countries such as Sweden, Denmark and Switzerland, where a pint and a half a day per person is consumed. Should the demand for milk and dairy products reach this point in the United States it would immediately become necessary to increase the number of dairy cows by four million. The demand for milk in the manufacture of ice cream alone has tripled itself in the past ten years.

With the recent improvements made in the condensing and dehydrating process, a constantly growing demand for condensed and dried milk is evidencing itself. Not infrequently, the demand for fresh fluid milk made by the constantly increasing population along the eastern seaboard exceeds the supply. This is attributed to the fact that the milk-producing capacity of the dairy farms normally supplying these cities has been developed to about its limit. At present, in order that this situation may be met it is necessary for several of our eastern cities to utilize a considerable quantity of cream produced in the state of Wisconsin and in the Mississippi Valley.

The milk exports from the United States and Canada are steadily decreasing. The United States exports in butter about equal her imports of cheese. At the same time the enormous increase of our imports of dairy products from South America attracts attention to the southern hemisphere.

The milk dealers of our eastern cities have frequently been called upon to meet acute seasonable milk shortages. In like manner they have been called upon to utilize a seasonable milk surplus. The surplus problem is frequently solved through the manufacture of butter or cream powder, utilizing the skim

¹Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

milk for the manufacture of flat, condensed milk, skim milk powder or commercial casein. These products may be readily stored through the surplus season.

When the day of the acute milk and cream shortage arrives the dealer finds little difficulty in supplying his customer with a satisfactory bottle of cream reconstituted from the stored cream powder or butter. Cream reconstituted in this manner is frequently delivered to the consumer as fresh cream. Still another method of conserving butter fat until required is found in the practice of freezing cream; frozen cream keeps satisfactorily and can be quickly thawed and bottled for the trade.

The reconstitution of milk from butter and skim milk powder has also been practiced to make up shortages in fluid milk. The unscrupulous milk dealer, however, finds it more difficult to defraud his customer with this fresh milk substitute. The reason for this lies in the fact that usually a very short cream column forms on a bottle of remade milk. Quite recently reports have been received of a process whereby a remade milk of an excellent show of cream may be readily prepared at the city milk plant.

The wide-awake food official of today will do well to concern himself with the adoption and enforcement of measures to protect the milk-consuming public from fraud in this respect. In the opinion of the writer, there is no more justification for the milkman to sell as fresh cream a cream made from cream powder or melted butter than there is for the fruit merchant to sell dried or canned peaches for the fresh fruit.

The health official is becoming conscious of his responsibility as it relates to this phase of the milk problem. He has not lost sight of the fact that cream is frequently prescribed in modifying milk for infant feeding. For some time past he may have been receiving reports of excessive bacterial counts in the richest, supposedly the highest—quality milk, while satisfactory reports were received for the ordinary market grade. An investigation at the milk plant quite likely would reveal the cause of the excessive counts to be a high-count cream added to the milk at the termination of the pasteurization process, an instance of direct and wilfull subsequent contamination of the pasteurized product.

If the investigation had been carried still further the source of the cream would probably have been found in the separation of the returned bottled milk of the previous day. It should be

borne in mind that this milk, previous to its circulation and return to the plant, had itself been re-inforced by cream obtained by the separation of still older route returns. The accumulation of bacterial toxins under such conditions and their effect upon the intestinal tract of infants is well known. If top milk of this character is utilized, as is frequently the case in infant feeding, the woeful effects upon the infant, coupled with the certain distress of the parents, presents a piteous aspect indeed.

For some years past, milkmen have been educating the public to judge quality in milk almost entirely upon flavor and depth of cream line. With the advent of the pasteurizer came a ready process of reducing lactic acid fermentation in milk to a minimum. With a single stroke the milk dealer eliminated his sour milk difficulties and joined hands with public health officials throughout the country.

Aside from the public health virtues realized by pasteurization a ready means was made available whereby thousands upon thousands of gallons of milk could be preserved by heat and kept in suitable condition for market upon the following day.

With a solution of the sour milk problem at hand the milk dealer devoted his energies to devising means of outdoing his competitor. Granting that the milk is sweet, color, depth and line of demarcation of cream in the bottle are probably the best selling features. The sales department frequently attempts to extend the business using these factors as a basis. Meanwhile, the plant superintendent occupies himself with the problem of how to manipulate the various grades of milk so as to obtain an advantage over his competitor in the apparent quality of the bottled milk. In his efforts along these lines he has been able to establish a method of heating, holding and cooling which in itself is productive in inducing the creaming quality in the milk to be desired to the creaming qualities of the same milk when bottled raw. This method of handling milk has been defined as "pasteurization" by a number of states and cities in the United States, and consists of heating at a minimum temperature of 142° F., holding for a minimum time of thirty minutes and cooling promptly to below 50° F. The more conservative authorities favor a minimum pasteurization temperature of 145° F.

Many milk dealers object vigorously to 145° F. as a minimum temperature, seemingly because the maximum commercial advantage is not realized at this point. To increase further the

volume of cream in the bottle the dealer frequently finds it to his advantage to add cream to pasteurized milk just before bottling, but prior to the cooling process. Cream that has been previously passed through a homogenizer, a machine which reduces to a considerable extent the size of the fat globules, is sometimes used. When homogenized cream is used to reinforce milk an inflated cream volume results. Cream used for reinforcing milk is frequently found to be of questionable character and furnishes a potential menace likely at any time to cause subsequent infection of a properly pasteurized milk supply.

The addition of cream, cream powder or butter to milk for the purpose of increasing the butter fat content, or the addition of skim milk, skim milk powder or flat condensed milk for the purpose of increasing the solids not fat in milk, is known in the trade as "standardization." From the food official's standpoint the practice may be objected to because frequently it changes the balance between the fat and solids not fat to such an extent that the addition of one or the other is required to bring the milk up to the required legal standard.

The addition of cream gives a lower food value than is found in normal milk of the same final fat content.

In some cities food control laboratories frequently encounter milks of high average butter fat content but at the same time deficient in solids not fat. In order to make up the deficiency in solids not fat some milk companies have adopted the practice of adding skim milk powder. Quite recently superheated condensed skim milk has been used for this purpose. This product not only increases the solids but in addition improves to a considerable extent the color of the milk from which the fat has separated, giving it a deep color not noted in the untreated milk. This form of adulteration should be classed among the more flagrant attempts to break down fair competition and defraud the public.

Present-day milk control must take into account these factors: If a state or a city permits the sale of standardized or remade milks it behooves it to exercise adequate health supervision over the process. If cream or any other substance is to be added to fresh milk such substance must be of unquestionable quality, and the fact that the milk has been adjusted or standardized should appear upon the label for the information of the consumer. Infants are frequently dependent upon the public milk supply for their very lives.

The maintenance of adequate health supervision over the manufacture of the various dairy products utilized in the standardization and reconstitution of milk and cream is a difficult task indeed. A satisfactory solution of this problem is not yet at hand. As the strength of a chain is to its weakest link, so is a system of milk control that fails to take into account these elements. But even today, while health officials are groping in the dark, endeavoring to find a satisfactory solution of this most serious problem, we stand witness to a pitiable spectacle of state and municipal legislative bodies lending an attentive ear to the clamor of the trade as it vaults forward in an effort to secure the unrestricted legalization of standardization.

Unfortunately, their efforts in this respect have not been in vain. The Boston Chamber of Commerce, through its Agricultural Committee, in 1916, recommended that standardization be legalized. The following year the Tri-State Milk Commissions appointed by the governors of the states of Pennsylvania, Delaware and Maryland took similar action. The Commission on Milk Standards appointed by the New York Milk Committee considered the question. Later this Committee drafted a resolution stating that in their opinion it would be necessary to admit standardized milks. In the state of Ohio, in 1921, an act was passed by the Legislature which permits partial skimming and the addition of skimmed milk or cream to milk, providing the resultant standardized milk contains not less than 3.5% fat and 12% total solids and is labeled "standardized milk" and the percentage of butter fat. A year ago Federal regulations made permissible the standardization of milk for condensing purposes. The old requirement that milk for condensing purposes be whole, fresh and clean has been dropped.

The effect of permitting this adjusting or manipulation of market milk will most certainly be felt in our larger cities in the future. Already a great mass of our milk-consuming public are being supplied with milk of this character, a product of a manufacturing process rather than the normal lacteal secretion of the udder of the dairy cow. Where standardization of milk is practiced the present-day milk control official immediately becomes confronted with a momentous task in attempting to satisfy himself as to the safety of the product, particularly when used for infant feeding. Here is his current problem. He spreads his control as far as his meager funds will permit and hopes for the best. We must look into the future for an answer

concerning the effectiveness of his efforts. When epidemics traceable to the pasteurized supply occur in the future they will undoubtedly, as in the past, be traced to the imperfect rather than the perfect method.

Where the control official is called upon to exercise supervision over a milk supply as delivered to the consumer in its natural state, nothing having been added to it or taken from it, his problem at once becomes greatly simplified. He must, of course, see that effective regulations are at hand, governing the production and distribution of the product. If such regulations are not at hand, suitable regulations should be drafted and presented to council for adoption.

Milk regulations should be made as simple and brief as possible. An effective license system should be enforced, making it a misdemeanor for a dealer to sell either raw or pasteurized milk in the municipality without license. A special license may be used to advantage authorizing certain producers to produce raw milk, to be sold without pasteurization when produced under certain minimum sanitary requirements.

A comprehensive control system exercises general supervision over two fundamental classes of milk, the first designated "raw milk" and the second "pasteurized milk."

Minimum sanitary requirements should be drawn up for the purpose of regulating the production and distribution of milk to be sold in both the raw and pasteurized classes. Two grades of each class of milk should be authorized, additional requirements being made for the higher grade in each class. The minimum production and distribution requirements for milk to be sold in the raw state should be made quite rigid and conform to the methods and standards for the production and distribution of certified milk, as recommended and adopted by the American Association of Medical Milk Commissions, June 26, 1923, except that a higher bacterial count, probably 50,000 per cc as a maximum, might be permitted.

The additional requirements for the higher grade of raw milk should conform to the methods and standards for the production and distribution of certified milk adopted by the American Association of Medical Milk Commissions, May 1, 1912. The writer sees no reason to limit the sale of raw milk to include only such milks as are sold under the copyrighted designation, "certified."

In the case of the pasteurized class, minimum production

requirement should be made to conform to average farm conditions in the milk shed, from which the supply is to be drawn. The additional requirements for the higher grade of pasteurized milk should be similar to the minimum requirement for milk to be sold to the consumer in the raw state, except that the maximum permissible bacterial count should be reduced to about 25,000 per cc.

Semi-monthly inspections of dairies producing milk sold raw should be made, the physical condition of the herd and dairy employes ascertained at each visit, and attention given to sanitation of the dairy and potability of the water supply.

Public health demands that all persons handling milk to be delivered raw to the consumer, or persons handling pasteurized milk during or after the pasteurization process, submit to a thorough medical examination, including laboratory examinations of nose and throat cultures and examination of specimens of urine and stools for the purpose of eliminating disease carriers. These examinations can best be carried on by a physician, especially appointed for this purpose. Certificates of health should be issued to dairy employes qualifying by physical examination, such certificates to remain valid for a period of six months from the date of issuance. The sale of milk from diseased cows or milk which appears abnormal should be prohibited.

Special regulations are usually necessary for the purpose of securing uniform labeling of milk and for the prevention of fraud. Usually it is found advisable to require the day of pasteurization on pasteurized milk and the day of production on raw milk. If standardization is permitted the minimum butter fat content should be stated on the label. The sale of pasteurized milk older than 36 hours should be prohibited. All milk should be capped mechanically. It has been found an advantage to require the serving of milk in the original containers at hotels and restaurants. The sale of milk containing visible dirt must not be permitted.

To be effective the milk regulations must include a satisfactory definition of pasteurization. This process has been defined by the U. S. Public Health Service, the U. S. Department of Agriculture, the National Commission on Milk Standards and the American Public Health Association, as follows:

- (1) Heating to not below 145 degrees F.
- (2) Holding to not below 145 degrees F. for not less than 30 minutes.

- (3) Cooling to below 50 degrees immediately following the holding period.

Supervision of this process will probably occupy a considerable portion of the inspection time. This is as it should be. The great volume of milk sold as pasteurized demands the foremost attention of the inspector. While modern regulations require the use of recording instruments to record what takes place in the pasteurizer, the mechanical short-comings of some of the present-day pasteurization equipment, coupled with the variations frequently met in temperature-recording instruments, render it decidedly unsafe to depend upon either if the pasteurized supply is to be considered uniformly a safe one.

It is essential that the temperatures of the milk be taken by the control officer at frequent intervals during the holding period. A maximum registering thermometer, calibrated in one-degree intervals between 140 and 150 degrees F., has been found most suitable for this purpose. The milk should be in motion when test of temperature is being made and surface temperature avoided. Aside from temperature, the control officer must see that all of the milk is actually held for the required period of 30 minutes and that no leaks are present which would permit the passage of milk to the bottling machine before it has undergone the proper heat exposure. It is of equal importance to establish that no milk finds its way into the holding tank until the heated milk in the holder has been held for the required period of time, the tank emptied and the outlet of the tank securely closed. In attempting to satisfy himself that leaking does not occur, the inspector frequently meets with discouragement. The fact of the matter is that *valves on milk lines are forever leaking*, and that one of the largest problems confronting the manufacturers of dairy equipment is how to construct a leak-proof valve.

These leaking valves constitute one of the greatest hazards connected with the pasteurization process. For the present their behavior renders unlikely the attainment of the perfect commercial pasteurization process.

The final concern of the health official, once he has satisfied himself that the milk has been properly pasteurized, relates to the establishment of adequate measures to protect the supply from subsequent contamination. Granting that the health of the employees has been certified to, the inspector demands clean milk lines; clean coolers, completely covered; clean bottle fillers

and milk bottles. All of this equipment must be thoroughly sterilized before use. Among these several factors the bottles probably deserve the greatest consideration. During the past few years the introduction of several types of combination soaker and rotary-brush bottle-washing machines have revolutionized the methods of handling milk bottles in many of our large city milk-plants. A number of these machines depend entirely upon solutions of caustic soda to produce sterilization of the milk bottle. Still others depend upon solutions of hypochlorite, while a few of the most recent types secure sterilization by means of hot water.

The commercial advantage attained through the operation of machines which prepare and cool the bottle for immediate filling is generally recognized by the industry. As a result this method is rapidly replacing the older one. The health official, however, is inclined to hold in abeyance his opinion concerning the relative merits and safety of this new method. For the present the city of New York has taken the lead in this matter by requiring hot water or steam sterilization of all milk bottles and discouraging the use of hypochlorite solution in milk plants. Chicago has devoted some time in studying the degree of bottle sterilization accomplished by exposing milk bottles to various concentrations of hot caustic solution for definite periods of time.

Once the milk is bottled and the bottles closed by firmly seated milk caps, it is placed in the cold storage room, preparatory to delivery upon the following morning. The opportunity for further contamination has now been reduced to a minimum and the extensive multiplication of bacteria already present in the milk prevented by thorough refrigeration. Upon the following morning the inspector meets the milkman while engaged in the delivery of milk, purchases a bottle of each grade, seals the milk in the presence of the driver, placing same in a well-iced, portable refrigerator until it can be delivered to the laboratory for examination.

Assuming that inspections in the field have demonstrated that the minimum requirements for the production and distribution of each grade have been met, an efficient laboratory is indispensable in determining the sanitary quality of the milk and in exercising control over labeling and proper grading of milk as delivered to the consumer. Although it has been found that the better quality of milk usually comes from the well-equipped, modern dairy farm, this is not always the rule. Frequently we

meet with dairies, lacking in modern buildings and improved equipment, producing milk of excellent sanitary qualities as determined by laboratory examination. The reason for this lies in the fact that the methods at these farms are of a first class character, offsetting the lack of modern buildings and improved equipment. On the other hand we have encountered milk of inferior quality produced at the higher class of dairies where methods of production and handling are bad. The laboratory is of inestimable value to the field inspection force in revealing supplies of this character.

The laboratory also indicates whether or not the milk has been adulterated, and from its findings prepares evidence for use by the health department in the prosecution of violations of the milk regulations. The publication of monthly milk scores or sanitary grades has proven of considerable value in milk control. Average scores made from the results of laboratory examinations of milk, as delivered to the consumer, seem to be best suited for publicity purposes.

TUBERCULIN TESTING IN VERMONT

Dr. L. H. Adams, our Resident Secretary for Vermont, gives some interesting figures on the amount of tuberculin testing done by private practitioners of Vermont for the fiscal year ending July 1, 1924. The figures are as follows:

Accredited herd retests.....	24,973
Private testing in herds under supervision as additions to same.....	4,946
Private tests for shippers on cattle going interstate.....	7,919
Other private tests in herds not under coop- erative agreement.....	6,882

Dr. Adams goes on further to state that the total of 44,720 cattle tested last year will be materially increased this year.

Previous to the inauguration of tuberculosis eradication work in Vermont there was not a year in which the number of cattle tested by private veterinarians exceeded 7500.

DIAGNOSED

Veterinarian Jothan Wimp has given out that the ailing goldfish at the Blue Front Pharmacy has exzema on a small scale.—Almanack in *Bulletin of Pharmacy*.

MILK AND DAIRY INSPECTION¹

By J. B. HOLLINGSWORTH,

*President, International Association of Dairy and Milk Inspectors,
Ottawa, Canada*

The vital importance of the care and scientific inspection of milk and dairy products and of the conditions under which they are produced is such that no local board of health is complete nor can it afford to be without a trained veterinarian as a member. My reason for making this statement is because the food supply of the community comes under the supervision of the local board and the quality of the food supply is of paramount importance. The veterinarian deals with this supply at its source, being a man scientifically trained as to the care and health of animals and as to the conditions under which they may best be treated, with an eye to sanitary results. The old days when meats for human consumption were peddled everywhere without any safeguards for the consumer are gone, and people are aghast now to think of the risks that were run. Risks there were, of course, but as meat is not, at least as a general rule, eaten raw, the thought of these risks enhances the importance of the subject I have in mind—the importance of a sanitary and safe milk supply; for milk would be used in its raw state with results disastrous to our people were it not for the care and supervision of men trained for such purpose, who realize that eternal vigilance is the price of safety.

The task of ensuring a sanitary milk supply for even a moderately large town or city is a very difficult one, inasmuch as old customs and prejudices die hard. The dairyman does not realize that many of the diseases, which were in former years looked upon as unavoidable visitations of Providence, are now known to be preventable by the adoption of proper precautions in handling food products. Therefore, all cows furnishing milk for human consumption should be free from disease, comfortably housed in clean and hygienic stables, regularly and properly fed, supplied with pure uncontaminated water, kept scrupulously clean, kindly treated, and milked under the most sanitary conditions.

In 1907, as a result of public agitation, aided materially by the

¹Presented at the sixty-first annual meeting of the American Veterinary Medical Association, Des Moines, Iowa, August 19-22, 1924.

press, the city of Ottawa municipal authorities undertook the improvement of its general milk supply. On the fourth day of May, 1908, a by-law was passed, which stands today, I believe, the most complete and effective by-law of any Ontario city. The outstanding features are the licensing of both the retail dealer and the dairyman on the farm, and the appointment of a veterinarian to make regular inspections on the farms as well as in the city. It also prohibits the sale of milk or cream sold raw, unless the cattle have successfully passed the tuberculin test. The tuberculin testing of our dairy herds is under the supervision of the Veterinary Director General. The Federal government pays compensation for all reacting cattle slaughtered under the Municipal Tuberculosis Order. The compensation received is \$40.00 for grade cows and \$100.00 for pure-breds, with salvage. We have in this way been able to clean up all our dairies supplying raw milk and over 50 per cent of our producers supplying pasteurizing plants have applied and have had their herds tested and reactors removed, as they realize fully that, from an economic standpoint, it pays to keep the herd healthy, to say nothing of the protection of their families.

The possibility of transmitting tuberculosis of cattle to the human being is now well accepted and the safeguarding of the milk supply in this respect is a necessity, for perhaps the greatest number of cases of tuberculosis are developed in childhood when susceptibility is far greater and during a period when milk bulks large as an article of diet, and with so much overwhelming evidence of the dangers of the transmission of disease through milk, we have the problem confronting health departments of how most efficiently to remove these dangers.

The united opinions of those who have for years been carefully studying the question of a sanitary milk supply is that all milk should be scientifically pasteurized, save that which comes from tuberculin-tested cows, and even that would be safer if pasteurized, but no municipality should countenance the pasteurization of milk from an unknown source or quality. All pasteurizing plants should be under the control of the health department and should bear their endorsement.

Milk production is a business proposition. Like other business propositions it must be carefully studied. In the dairy business the main machine is the cow. Points of merit by which production may be anticipated are known to all of you. The knowledge of these points does not go far enough. They

must be supplemented by actual performance, which means that the successful producing dairy herd is one that records the performance of each animal, not periodically but continually. By this method a comparative record is available, profit is distinguished from loss and boarders are not permitted to consume the profits and occupy valuable space. With a profit being assured from the operation of the dairy conducted along hard and fast business lines, the improvement along sanitary lines is an advantage in making the work more healthful and interesting.

To recapitulate, my theme in the foregoing has been to create a better conception of the means for improvement of the dairy industry as it is here that the dairy inspector is of greatest value, being able to impress upon the producer the importance of a healthy herd and proper farm sanitation, showing himself as an interested instructor rather than as a police officer.

The marked change of attitude on the part of the producer towards the official is a fact within the experience of all men officially connected with the important work of safeguarding a city's milk supply.

The intimate connection between the purity of the milk supply and the health of the people dependent on it as an article of food, I have already touched on, but I would crave your indulgence in allowing me to emphasize the educational value of our work. In the olden days, to the ordinary farmer a cow was merely an animal to be regarded with no particular interest so long as she supplied milk, the quantity or quality of which was to be regarded largely as a matter of chance. Today, if I may be permitted to refer to the district surrounding the city of Ottawa, with which I am personally familiar, the individual cow has become an entity in herself. Our producers have become, to a degree at any rate, scientists and specialists and each cow stands or falls on her own merits. Her health, her pasture, her winter quarters, her milk-producing qualities, her intimate relation to the health of the public at large are, at least in general terms, understood by her owners as matters worthy of special study and consideration, and I may safely say that the officials guarding the city's milk supply are looked upon by the producers, not as foes or spies, but as allies and friends. I take it that our object is not to destroy the producer's herds because they are diseased but to educate him to protect them against disease and so to perform our initial duty, namely, to protect the public health. To the average producer, the object in keeping cows is

to make money out of them. We are, to use a popular term, the efficiency experts aiming at not only aiding him in his perfectly proper idea but also as specialists educating him along scientific lines in the production of a sanitary milk supply.

The best asset a nation has or can have is its children and as from the physical viewpoint the unquestioned deteriorating influence of civilization lessens the human milk supply, the increasing value of our work in improving the food on which the infant must subsist grows even greater.

Those who guard the food of the nation's babes, who give study and care and time, who spend themselves, often enough under difficult circumstances, in educating our milk producers as to the infinite value of the quality of the food they supply to the nation's children, have, at any rate, if I may voice my own opinion, a vocation and a work which is worth a man's while. Education along any line is always a matter of time but if, as the result of a society's work or a man's life work, there has been the improvement of chances for the children's health by the elimination of any of the evils which attack the citadel of their health and of their life, the effort, to say the least, has been worth the expenditure of the best that is in any man. We all realize—you in your great Republic and I and others in our great Dominion—the relation of the milk supply to the public health and, Gentlemen, if I seem to dwell somewhat at length on this particular phase of our work, I do not apologize, for to me as to you the crux of the matter lies here: the longer a man deals with vital issues as regards the welfare of his fellows, the more naturally does he subordinate personal interests to the ideal of service, else will he naturally not serve at all. We who serve the public weal as best we can are ranged with those who fight the battle against physical suffering and the diseases that fret the flesh of man.

Individually it is perhaps not much that we can do but as an association of scientifically trained and keenly interested workers, we can do something at any rate, be it great or small, for the improvement of conditions. If at times we seem to make little progress, yet it is something to serve and if we can in any degree lessen the toll of lives of the slain children of the daughters of our people we will lessen in some degree—

"The fierce confederate storm of sorrow, barricaded evermore within the walls of cities."

DISCUSSION

DR. J. I. GIBSON: Mr. Chairman, I am greatly interested in the paper and enjoyed it. In the line of work which I am pursuing, I first went out to present to the people all the danger signs of the milk question, and neglected to take the opposite side and put milk on the high pedestal where it should stand. Insinuations came to me that I was injuring the dairy business, so from that day on, I made it my business first to pay my respects in the right way to tuberculous milk, contaminated milk, dirty milk, and then to turn and raise clean, wholesome milk, which is the term we use to cover it all, raise it above everything else in the world. I think that every man engaged in eradication work, especially in dairy districts, should use that influence upon the dairy owner with whom he is working. Sometimes the dairyman does not realize his true position, but if you put it up to a dairyman, "John Jones, you are the guardian of so many hundreds or so many thousands of innocent children, where your wagons make the trips," and put upon him this responsibility, it will have a wholesome effect.

I remember, twenty-five years or so ago, when a dairyman was afraid to test his cattle; he was afraid to have a reactor found in his herd for fear it would break him in the business, and it did break him in the business when the fact was known that there was a reacting animal found in the herd. Today, the people are taking the truth on the question, and the consumption of milk is increasing, while the public press is filled with reports of heavy shipments of reactor cattle being slaughtered and descriptions of the lesions found; the disgusting conditions found in the killing room. In spite of all that, the consumption of milk is rising.

Last year, the American people consumed 212 quarts per capita. That is getting well up to what we ought to consume, but we are not high enough. It is a wonderful result. With the exposing, day by day, of the diseased conditions in the dairy herds, still the public has confidence enough to increase their consumption of the product. We can still help along this line—every man of us—if we stand properly for clean, wholesome milk and condemn to the limit diseased or contaminated milk. So we can do a great work along these lines, and we can help these dairymen, and if they find that we are helping them, they will be for the movement.

I remember when every prominent man, every agricultural professor or educator, every breeder of pure-bred dairy cows, was absolutely against the tuberculin test. Today, you can not find a reputable man in any line of endeavor who is not for the movement. The white plague is the greatest curse that ever rested upon the human element. History has proved it down through the centuries, and why not every man and every citizen stand for this movement? Sometimes I ask my audiences, "Why not you mothers, with babies in your arms, rise up and say, 'This cleaning process must go forward until every last tuberculous cow has been destroyed.'" I think what we want is more sand, and if there are some states and localities that haven't any sand, let's import a little sand for them. (Applause.)

DR. J. A. KIERNAN: The contribution made by Dr. Hollingsworth is a most valuable one. No one in the United States is in a better position to summarize the milk situation from the various angles than is the President of the International Association of Dairy and Milk Inspectors—Dr. Hollingsworth. He sees the side of the producer, the veterinarian, the consumer. This Association has not in recent years devoted very much time to the discussion of milk, and it is one of the subjects that I think should be foremost in the projects of this Association. It is a food produced from animals which are under the care, as far as the preservation of health is concerned, of veterinarians throughout the world.

I believe that the Association should set up a standard for milk ordinances and take a more prominent part in the methods of production of milk, from the farm right down to the consumer.

The point which Dr. Gibson brought up was well taken. When the co-operative tuberculosis campaign was inaugurated in 1917, there was grave apprehension in the minds of many people as to the advisability of getting in and condemning so many dairy cows, on the grounds that it would cause

alarm among the people at large and decrease the demand for milk, and thereby deprive the human family, and especially the children, of the most nutritious food available.

Another point was brought up that it was going to decrease the number of dairy cows, and was going to injure the dairy industry in many ways. The facts of the matter are: After seven years of work, during which time more than 200,000 reactors have been destroyed, the industry is in a more flourishing condition than at any previous time in the history of the country. As was stated, the average consumption of milk was far greater last year than in any previous year. The average value of the dairy cow in the United States was greater than any previous year, and the total number of dairy cows was greater than at any previous time, so that if the tuberculosis eradication work has had any effect upon the dairy industry, it has had a stimulating effect rather than a destructive effect. (Applause.)

DR. PETER MALCOLM: I came here this morning to listen to the discussion on the milk ordinances and things of that kind. I am glad to note that we have, in the state of Iowa, all the things that you are asking for. Our legislature uses very good judgment in fixing our laws. We have embodied in the law which was enacted by the 38th General Assembly, with the one object in view of protecting the lives of human families, that all herds supplying milk for human consumption must pass a tuberculin test. The legislature also stated in that law what should be the qualifications of the veterinarian who could make the test. The Commissioner of Animal Health formulated an ordinance, which became universal, providing that in each town, whether it is a city of 20,000 or a city of 800, if the local board of health passes the ordinance, it becomes effective and part of the law. So, as I said in the beginning, I am glad to be here to find that we have been working along the proper lines. I thank you. (Applause.)

HOGS SCARCE AGAIN

If the farmers of the United States could arrange for hog marketing on a co-operative basis, the Government report of a decrease of about 12,000,000 in the number of swine on the hoof of this country would be valuable to those who own or expect to raise hogs. Under the haphazard system the report is likely to cause an appreciable loss through "overproduction."

The number of hogs this time last year was calculated to be about 63,000,000. The decrease will make the total now close to 50,000,000. Yet it will prove profitable, not to the farmers, but to those who will take advantage of a marketing arrangement which penalizes the raisers of hogs.

Politicians offer remedies for depression on farms, but the farmers are coming to realize that they must take care of their own interests. If they can market upon business principles what they have to sell, they can prosper. If they fail to do business on a merchandising basis they must continue to suffer hardships.

Recent big sales by the Burley Tobacco Co-operative Association have answered the adverse criticism advanced by opponents of co-operation. The co-operative principle applies to other products of the farm. (Editorial in *Louisville, Ky., Times.*)

HOW TO ORGANIZE FOR MEAT AND MILK INSPECTION IN A CITY¹

By D. O. BROWNING,

Health Officer and Secretary, Board of Health, Sumter, S. C.

In preparing this paper I do not lay claim to having found anything new or original in ways of organizing milk and meat inspection in cities and the only excuse I have to offer for taking a few minutes of your time is the hope that I may stimulate a greater interest in the veterinary profession of the state for this kind of work and that in returning to your various homes you will look the situation over there and ascertain whether or not your present inspection is what it should be, and if not devise some way to improve it. Or if there is no inspection start the ball rolling toward organizing one.

At the present time a large amount of this work is being done by others than veterinarians and it behooves us to do everything we can to save this kind of work to men of the veterinary profession. All other professions are closed to outsiders. No one but an M. D. ever thinks of making an insurance examination. Any form of legal work is done by a lawyer and one very seldom hears a sermon, except it be delivered by a regularly ordained minister. But it is open season the year around for everyone in the preserve of the veterinary profession. Through training and experience the veterinarian is the logical man for this kind of work, yet we see these positions filled by doctors, laymen and just plain politicians. All of the big positions are filled by men drawn from the medical profession, especially the executive heads and, giving the devil his due, they are doing a good job of it. In some instances these places are filled with politicians or men with a political influence. Positions of smaller calibre are filled by laymen and occasionally by a veterinarian. Should not we of the profession have what is justly due us? Goodness knows, with the advent of automotive power and the abolition of the cattle tick we are about to run out of a job.

After taking stock of the situation and deciding that a milk and meat inspection system is needed, it then becomes necessary to convince the public that it is needed. To do this it is necessary to take the public into your confidence and explain why it is needed through the press and various organizations like the

¹Read before the annual meeting of the South Carolina Association of Veterinarians, Sumter, S. C., July 14-15, 1924.

chamber of commerce or board of trade, the Kiwanis, Rotarians, and all other civic bodies. The doctors and local medical society can be a big help if you can get them interested.

Milk inspection is easier to put across than meat inspection for the reason that its protection to babies carries a greater appeal and it is usually cheaper to inaugurate.

There are two fundamental features to be stressed in your propaganda. The first, of course, is for bettering the public health. In this connection it might be well to look over the death returns for a given period, picking out the infants which have died of summer complaint. What you learn may stir you to greater activity, and there is nothing which impresses the public so much as those things which happen right at home. Try to get a line on cases of meat poisoning and paratyphoid fever from the doctors and health officer. Write cities which have inspection for data on these diseases and compare them with other cities which do not have inspection. In Sumter the only cases of meat poisoning which have occurred since the abattoir commenced operation last May a year ago, have been in people who ate uninspected meat outside the city and there has been no case of paratyphoid reported. Prior to the time of the inauguration of the meat inspection ordinance both occurred with disconcerting frequency for the health officer. This may be just a coincidence, but I think otherwise.

The second feature goes well with the dairymen, stockmen and business interests of the community. Especially if the advent of the boll weevil has created an interest in the live stock industry. That is that inspection is absolutely necessary for the prosperity and growth of the business. Efficient inspection creates public confidence in the value of the product and with it a greater demand. This is exemplified by the attitude of the U. S. Department of Agriculture and numerous state departments of agriculture, when they carry out milk inspection. Public health is not their business, but if public health suffers through the use of dangerous milk, such condition would be harmful to the live stock business. Health departments in many states are now realizing they have been asleep at the switch and are trying to take over this work.

Another point I wish to bring out here concerns the matter of food inspection, which may be used with good effect on the public. All cities in South Carolina have a health officer. It is a state requirement. In the smaller cities it is usually a layman who fills this position. He is the entire health force and it is

up to him to do everything from mowing weedy lots to delivering a series of lectures to midwives. Somewhere in the middle of the list of his duties comes food inspection.

The public is strong for food inspection and wants it. In carrying out this item of his duties the health officer gives the fish-carts the "once-over" to see that they do not leak on the streets and that all bread-wagons are properly screened, which is well enough, but he leaves the meat and milk part of food-inspection alone, or if he does dabble in it any he is careful not to touch it hard enough to irritate it. Had any of you thought that if you had milk and meat inspection, the question of food inspection for your city is practically solved. These commodities are the foods mostly used and their nature renders them more readily injurious if not properly handled.

You can drag a loaf of bread around in the street and with a little careful trimming rid it of any harmfulness it may have gathered on its journey. A puffed can of beans or a spoiled banana blatantly announces what it is to the purchaser. But a pint of milk, containing a lethal dose of typhoid bacilli, can appear just as innocent as its certified brother, and a piece of sausage loaded to the brim with paratyphoid bacilli gives no warning of its dangerous character.

This brings us to the most important part of organizing a milk and meat inspection system, and that is the ultimate success of the affair. It would be better not to organize one at all, for the time being, than to have it fail. It is harder to revive a failure than it is to organize in fresh fields.

The first thing to consider in this respect is the man you employ to do the inspection. He should be a thoroughly reliable man and should have a deep consciousness of the importance of his work. For meat inspection I would suggest that a man with B. A. I. training in meat inspection work would be better than one without this experience. The thoroughness with which these men are drilled and the advantage they get in seeing so many pathological conditions renders them sure and accurate in their decisions and they are not so apt to think that slicing jaws and glands is a futile routine because they do not find something wrong every day. If your meat inspector is going to do milk inspection also, you may find that you may have to put up with an inexperienced man along this line as it is hard to get one qualified in both these lines outside of what he got at college. However, if your B. A. I. meat inspector happens to have been on tuberculosis eradication work he will be fairly well

equipped for dairy inspection.

For meat inspection it is absolutely essential that you have an abattoir, so equipped and constructed that it will be deserving of the name. It can be either privately or municipally owned. Do not consider an ambulatory inspection. You will have your inspector trying to be in all four corners of the county at one time, which will result in him compromising with a market inspection, which will degenerate into something a little better than no inspection.

Your abattoir should be backed by a good meat inspection ordinance requiring everything to be slaughtered at the abattoir. Do not try to straddle the fence to please the farmer by running in one of those "viscera-attached-by-natural-attachment" affairs. Require a live inspection; then the inspector is not bothered with any lightening-struck animals and cold slaughters.

More milk inspections go on the rocks due to friction between the inspector and the dairymen than any other one cause, and in most cases the inspector is more to blame than the dairymen, for the fact is that he fails to get the dairyman's viewpoint. The inspector informs the dairyman what he will have to do in order to get by without convincing the dairyman those changes are essential for improving his milk. The dairyman probably had those things in mind and was going to do them anyway, until he was antagonized. Another thing the dairyman does not grasp is the idea of bacteria, without considerable explaining, and the inspector takes it for granted that he ought to know. The milk inspector should consider himself an educator, and carefully and patiently explain the entire problem of producing good milk. While the inspector is educating the dairymen the public also should be informed as to the dangers of impure milk, and should satisfy themselves and not be contented with anything less than the best. Public demand is your strongest weapon, so do not fail to use it. The city should equip a little laboratory for testing milk, making bacterial counts, estimating butter fat, solids, etc. When a dairyman's count runs high in bacteria, give him plenty of your time at the dairy, going over everything carefully and advise him where his trouble lies. Then follow up any changes he has made in methods and equipment with more counts, and if he has improved, you will find you have an enthusiastic co-operator instead of a slacker, and the inspector is greeted with a welcoming smile instead of a frown. Publishing reports of bacterial counts will do a great deal towards bringing refractory dairymen around.

MUNICIPAL MEAT AND MILK INSPECTION

By E. D. KING, JR.,

Meat and Milk Inspector, Valdosta, Ga.

Municipal meat and milk inspection presents a greater variety of problems, as well as mental gymnastics, than any other known work to the writer, in that there are so many local needs and local conditions that are peculiar to the community.

In 1920 educational work was undertaken by the Board of Health of the city of Valdosta, on my recommendation, and several of my friends questioned the wisdom of such a course, but papers by authorities since have entirely justified my recommendation.

The conditions existing here at that time will be shown and explained, together with what the program of education developed, as shown in the following photographs:



FIGURE 1. An old-style milk-plant.

Figure 1 shows an old-style milk-plant, crowded quarters and joined to the milk-room. Figure 2 shows the new milk-room of this same plant, which is equipped with steam, hot and cold water, sterilizer, refrigerator, and fly-screened vestibule, which device is pointed at the top so that flies that find their way into it, work upward until they get into the trap at the top. We have now improved this vestibule by making a solid top that

causes the flies to get into the trap more quickly, as the only light place is at the top.

Figure 3 shows the best milking place we had in 1920, and the photo shows it all "dolled up" with lime for camouflage to fool



FIGURE 2. New milk-room of old plant shown in figure 1.

the flies, and a hen distributing the manure. Figure 4 shows the plant that replaced the one shown in figure 3, with good smooth concrete floor, water under pressure, and screened with



FIGURE 3. Best milking place in Valdosta in 1920.

poultry wire to keep chickens out.

Figure 5 shows the wagon that hauls the finished product. Figure 6 shows the best milk wagon we had in 1920. Note the

clean and attractive attendants. Figure 7 shows what replaced it, with the Superintendent of City Schools, A. G. Cleveland, who was then president of the Georgia Educational Association, and who can always find time for educational work in the schools conducted by the Health Department.

Figure 8 shows what hauls the milk from the only pure-bred herd of Jerseys that supplies the local market. This plant is equipped with steam and refrigeration, having a cooling coil in the ordinary frustrum-shaped cooler-aerator, and the agitator used with ice is retained. Floor construction is similar to that shown in figure 4 and the plant is supplied with city water.

Figures 9 and 10 show a cafe and drug store featuring "U. S. Accredited Herd Milk," with the chairman of the City Board of Education posing for the picture. He is now a member of the



FIGURE 4. The plant which replaced the one shown in figure 3.

committee selected to develop the Woodrow Wilson Memorial College here.

Valdosta has ten U. S. accredited herds, and since May, 1922, has required the medical examination of all food handlers and janitors of public buildings. During this time two tuberculous janitors have been removed from the school buildings, one tuberculous driver of a bread wagon, a syphilitic from a milk wagon, syphilitic from a bottling plant, and others, but not having seen the records of the City Health Officer lately I mention these from memory.

My Board of Health believes that healthy cattle milked by healthy milkers is the foundation of a good milk supply, and

regarding these two requirements as the most important, our work has been toward getting at first things first, and when this foundation is complete the superstructure of low bacterial



FIGURE 5. The wagon used to haul the finished product.

counts and more detailed education to both producer and consumer will be aggressively undertaken.

Salesmen of canned milk tell me that their sales have materially



FIGURE 6. The best milk-wagon in Valdosta in 1920.

decreased in Valdosta, due to the greater confidence of the people in a fresh milk supply. Milk complaints are rare, but

we do not claim perfection. We have only partially completed the foundation, on which we hope to build a milk supply of which we can be proud.

Active anti-fly work is maintained at all of our best plants



FIGURE 7. The wagon which replaced the one shown in figure 6.

and our local fertilizer plant has developed a larvicide that will keep flies from breeding in stable manure and at the same time add plant food to it, at a lower cost than hellebore root, which possesses no fertilizing value.

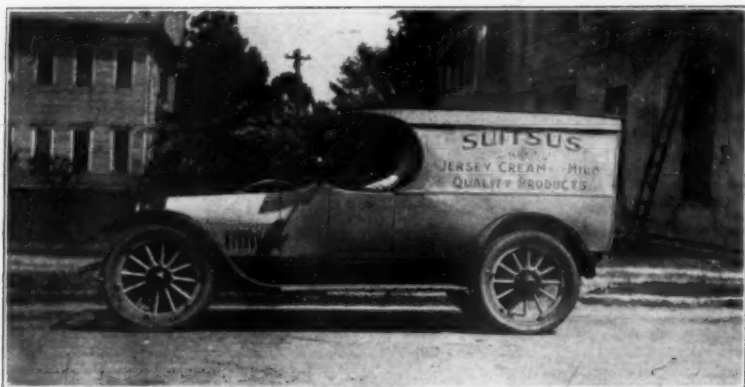


FIGURE 8. The wagon used to deliver milk from the only herd of pure-bred Jerseys supplying the Valdosta market.

Flies, while being a menace to health, also take out some fertilizer in their own development, and thus reduce the value of the manure. This has been shown to most of the milk pro-

ducers with the result that flies are not numerous at our best plants.

Any veterinarian who has reasonably applied himself to his



FIGURE 9. Cafe featuring "U. S. Accredited Herd Milk."

college work can handle the technical end of food inspection, but in the problems that affect the practical application of food



FIGURE 10. Drug Store featuring "U. S. Accredited Herd Milk."

hygiene to the conditions and needs of a community, his resourcefulness is taxed to the utmost, and the presentation of his work to the public—selling his program—by education of the public

to the needs of the community and the benefits of the work, requires more time and thought, tact, and determination than the actual technical work of food inspection.

Education then constitutes the corner-stone of our work, and one of the greatest newspaper men the world has ever known said, "One picture is worth a thousand words." Educators are agreed that 87 per cent of what we know comes through the eye.

With these statements from such authorities, and from my own experience, I feel safe in saying that visual education is the most effective and pleasant (to the victims of our campaigns), and urge that all who hope to make things what they ought to be, equip themselves with some means of visual education, preferably moving pictures, but if sufficient funds are not



FIGURE 11. A case of ventral hernia.

available for this, use the stereopticon, and get local scenes made into slides showing the desirable as well as the undesirable conditions. Visual education prepares your audiences for the printed page and they will enjoy reading what finds its way into the columns of your local newspaper relative to the subject so shown.

MEAT INSPECTION

Systematic meat inspection commenced in Valdosta, September 1, 1923, the Board of Health and Mayor and Council having adopted the U. S. Bureau of Animal Industry meat inspection regulations for Valdosta during the preceding month, and all

concerns shipping into the City were notified that they must get government inspection or discontinue shipments, with the result that one firm now has B. A. I. inspection.

We had opposition and plenty of it, and all varieties of it, but due to a better understanding of the work we have practically none now, and we have a set of stereopticon slides made from local photographs that we will add to what artillery we have already in place, and knock a home run in the near future.

We have a slaughter-house that is a recognized point for shipments for immediate slaughter and facilitates the holding of cooperative sales here, as one sale recently was absorbed by the local market, a farmer, being the highest bidder, bought the entire sale, and resold the butcher pigs to a market man, slaughtered the balance and placed them in the curing department of



FIGURE 12. Beef hung up in reach of dogs.

the local lighting and ice plant, and will sell them as bacon and hams locally.

During the last four months of 1924, 81 per cent of the beef and 91 per cent of the pork killed locally was killed in the slaughter-house.

Figure 11 shows what the public might get without meat inspection. It is a cause of ventral hernia that developed septicemia¹ and there being no systematic inspection here at that time the owner asked for inspection in order to be sure that he would not sell diseased meat.

Notice figures 12 and 13 closely. The first shows a beef

¹Jour. A. V. M. A., lxiii, n. s. 16 (5), pp. 621-622.

hung up in a corral, by nails driven in a tree, and easily in reach of the dog. The B. A. I. some time ago published a bulletin calling attention to the dog as a disseminator of parasites and disease. There is no water nor protection from flies, and

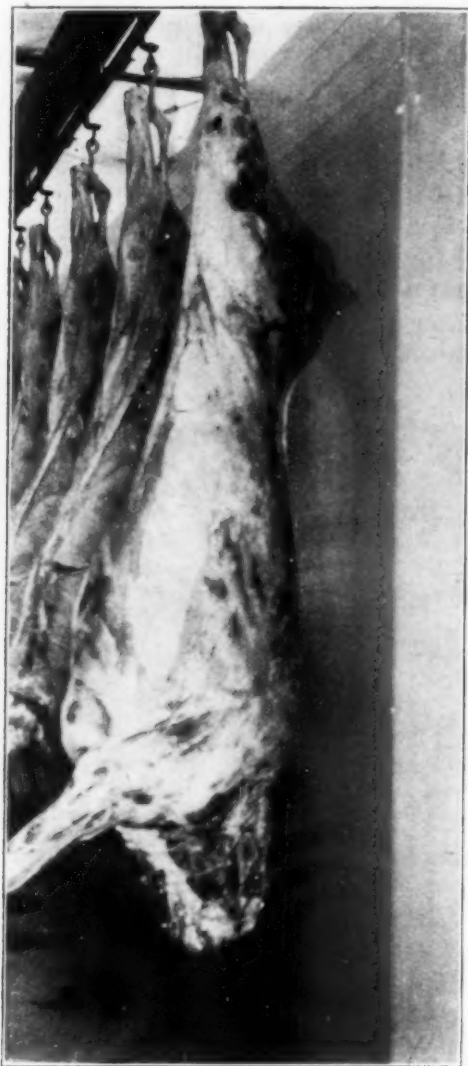


FIGURE 13. Beef hung up under sanitary conditions.

any experienced butcher will admit that the removal of the fly eggs ("fly-blows," in common parlance) is a greater undertaking than the actual butchering.

Figure 13 shows beef that has been butchered in a slaughter-house where machinery for hoisting, water under pressure, concrete floor and sewerage, and inspection are available, and the finished product is immediately placed in a screened hanging-room.

Figure 14 shows the killing-floor of the local slaughter-house. Compare what this shows with the average itinerant operative's surroundings. Show the public what happens to their meat supply from the hoof to their tables. They will get things right.

Figure 15 shows the fly-screened vestibule of a meat market, which was designed and built by two of the present owners of



FIGURE 14. Killing-floor of the Valdosta slaughter-house.

the slaughter-house, which is a privately owned institution, and has many advantages over a municipally owned establishment.

Figure 16 shows a herd of cattle that supplied milk for people and pure-bred pigs. Some culls among the pigs were shipped to a packing-house and condemned for tuberculosis. Cattle and hogs were then tested and practically all of them had it. This herd shows nothing to the eye, but was badly infected.

The information given here has been distributed as generally as possible. The films, "Out of the Shadows" and "Clean

"Herds and Hearts," have been shown here, with the result that it is hard to sell a cow unless satisfactory evidence is offered that she had been tuberculin tested.



FIGURE 15. Fly-screened vestibule of a meat market.

Four years ago they could not hold cattle 72 hours for a test and now they can hold them for a 60-day retest. Why? Because



FIGURE 16. Apparently healthy, but infected with tuberculosis.

of the interest of the public in this disease and their knowledge of its control.

We have destroyed several tuberculous cows, and pretty conclusively fixed the cause of two cases of human tuberculosis as being of bovine origin, and never had any trouble getting reactors slaughtered.

We published the Odom case² in the JOURNAL, showing how the boy contracted tuberculosis from a cow, and have given out all such data, but we believe that other cities can find as much, if they will look for it persistently.

CONTROL OF SAPONIFIED CRESOL SOLUTIONS

Effective methods for controlling saponified cresol solutions, particularly the proprietary brands used in official disinfection under supervision of the Bureau of Animal Industry, are discussed in Department Bulletin 1308, just issued by the United States Department of Agriculture. The functions that such preparations must perform in the field are reviewed and a set of specifications drawn to cover the evident requirements. Tentative standards for performance and composition are proposed.

Copies of Department Bulletin 1308, entitled "Chemical and Physical Methods for the Control of Saponified Cresol Solution," may be had free, as long as the supply lasts, by writing to the department at Washington, D. C.

THE HORSE STILL AT PAR

There has been a drastic reduction of the number of horses used by inhabitants of cities and towns. The 1910 census placed them at 3,183,000; the 1920 census showed only 1,706,000. But in the rural districts, where the overwhelming majority of horses have always been, no such reduction has taken place. In 1900 there were 18,267,000 horses on the farms of the country; in 1924 there were 18,263,000.

And yet, at the beginning of the twentieth century there were less than 15,000 automobiles in the United States as compared with 17,000,000 today. Apparently the horse is still holding his own, and it remains to be seen whether the new motor appliances for the farm will drive him from his time honored sphere.

It is to be hoped that they will not; men are better off with horses than without them. (Editorial in *Washington Post*.)

²Jour. A. V. M. A., lxii, n. s. 15 (6), pp. 763-765.

CLINICAL AND CASE REPORT

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

MESOTHELIOBLASTOMA OF THE PLEURA

By WILLIAM H. FELDMAN,

*Assistant Pathologist, Colorado Agricultural College,
Fort Collins, Colo.*

New growths in which the type cell is mesothelial are not frequent and veterinary literature yields but scant data on tumors of this kind. Even in the human subject they are seldom encountered, and but few authors devote more than a few paragraphs to their description and some standard texts on pathology fail to describe them at all.

Due to the scarcity of special characteristics by which the adult mesothelial tumor cell can be differentiated from many cells found in sarcomatous and carcinomatous tumors, together with the difference of opinion as to the embryogenesis of these cells, a great deal of confusion has existed in the nomenclature and classification of these new growths. Tumors springing from tissues covered with mesothelial cells have been variously called mesotheliomas, endotheliomas and alveolar sarcomas, while Kitt considered new growths of the serous surfaces as being true cancers or epithelial in nature.

The controversial perplexities that have grown out of the attempts at classification of the tumors arising from the middle or mesodermal layer of the embryo are most formidable, yet in face of it all there seems to be about as much lack of agreement as ever. Each system of classification has its own adherents who succeed in proving a very good case to substantiate their views and one cannot go through the mass of evidence which is offered pro and con without a feeling of more or less uncertainty that is born of the haze of argument.

The tendency on the part of some has been to include all tumors whose type cell springs from the cells which line the blood and lymph vessels, the arachnoid space, and which cover the serosa of the thoracic, peritoneal and pericardial cavities, under the one heading of endothelioma. Others however,

including Mallory, would remove from endothelioma those tumors built up from the cells which normally clothe the serous membranes, and would designate these as mesothelioma.

Considering the modern view explanatory of the embryogenesis of the tissues involved, the term mesothelioblastoma seems a fitting designation. Our reason for so naming these tumors is based upon the embryological origin of the tissues from which they arise. The embryogenesis of the cells lining the coelomic cavity is clearly shown by modern embryological teachings to be mesodermal. These cells are part of the mesothelial structure which consists of mesothelial cells and the underlying mesenchyme which in the later development of the embryo is further differentiated into a supporting connective tissue.

With this brief histogenic review it seems proper that tumors of mesothelial character be termed mesothelioma. This was the view of Adami, who placed the tumors of this variety under what he called lepidomas of the second order or transitional lepidomas. This writer also placed under the transitional lepidomas the endotheliomas, but considered them separately, reserving the term for those tumors originating from the cells lining the blood and lymph vessels. Mallory also subscribes to this use of the term endothelioma, but in addition applies the term to those tumors which arise from the cells of the arachnoid space. Others, following Borst's classification, which is built on the basis of but three fundamental tissues, epithelium, endothelium and connective tissue, include the neoplasms of the mesothelium under the heading of endothelioma, differentiating the different varieties by their location and clinical manifestations. For example, pleural endothelioma, meningeal endothelioma, angio-endothelioma of the skin, etc.

One objection to a purely histogenic classification of these and other tumors is the difficulty that is often encountered in determining the parent cells from which the particular neoplasm sprung. Theoretically the scheme is ideal, but in its practical application one is apt to possess an honest doubt as to the histogenic origin of the cells forming the structure. However, a careful study of the cytology of the individual cells, their relation to each other, and to the supporting framework, together with the evidence available from the clinical data and gross anatomy, will in most cases enable one to place the tumor under consideration in its proper histogenic relationship.

REPORT OF A CASE

A grade male horse, aged 10 years, color bay, was brought to the veterinary hospital of the Colorado Agricultural College because of a pronounced edema of the ventral portion of the thorax. The animal was in good condition otherwise and continued to eat and drink as usual up to the time of death. The cause of the edema appeared rather obscure, and the condition did not improve with treatment, but progressively became aggravated. Feeling that further therapeutic efforts would be useless the animal was finally destroyed. A postmortem

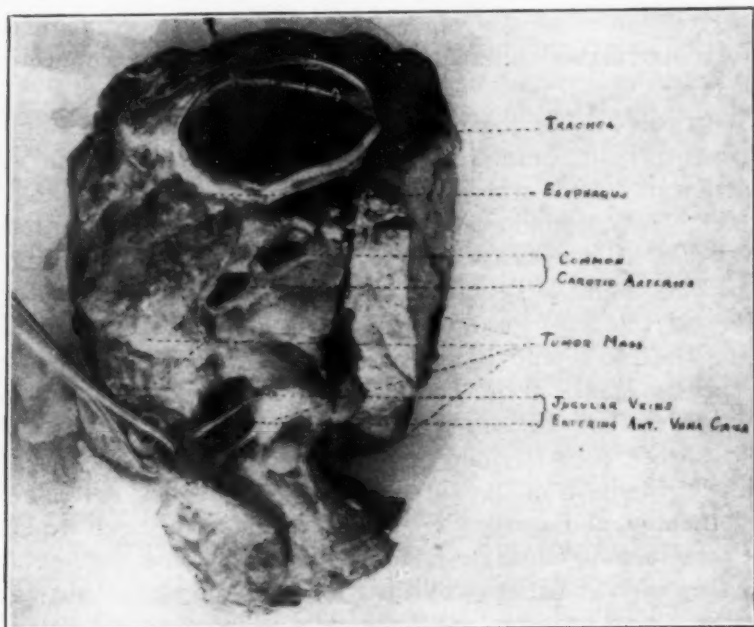


FIGURE 1. Malignant mesothelioma. Large tumorous mass from the anterior thoracic aperture of a horse, involving the esophagus, common carotid arteries and the jugular veins. (Same case as fig. 2.)

examination was performed within an hour after death, and a large tumorous mass was found at the anterior thoracic aperture, which involved in a very intimate way the esophagus, common carotid arteries and the jugular veins (fig. 1). Smaller nodular formations were also found firmly attached to the parietal pleura of the right side. These nodules were multiple and quite firm, of a grayish-white color, while in size they were comparable to a kidney bean.

Material for microscopic examination was selected from

different areas of the large mass, and from the smaller nodules from the pleura. This was subjected to formalin fixation and embedded in celloidin, sectioned and stained with hematoxylin and eosin. All sections obtained from this material showed the same general structural design of compact masses of polyhedral cells, alveolar in arrangement, due to a dense fibrous stroma, which was, for the most part, quite abundant. Mitotic figures were frequent and as the tumor in its gross anatomy revealed a certain vigorousness of growth, our diagnosis was malignant mesothelioma.

In the consideration of mesotheliomata as a group the following scheme is suggested:

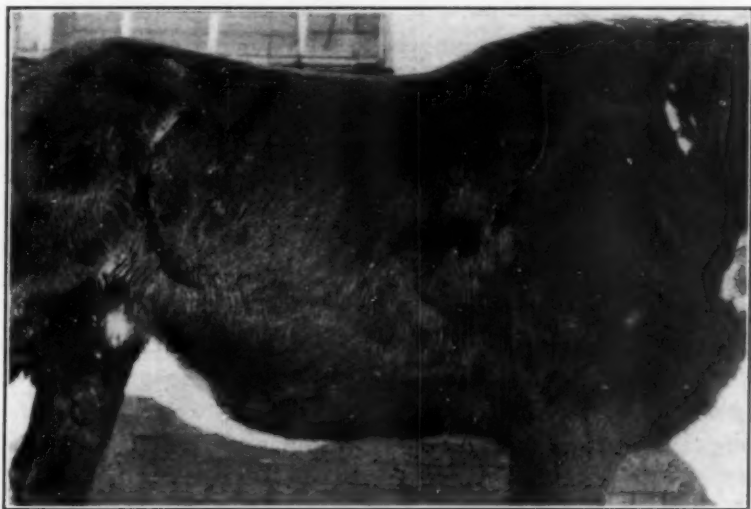


FIGURE 2. Pleural mesothelioma. Horse showing edematous condition of the ventral thoracic wall. (Same case as fig. 1.)

Definition: A mesothelioblastoma may be defined as a neoplastic formation resulting from the autonomous proliferation of the cells which normally clothe the serous membranes.

Occurrence: As mentioned above, these tumors have been but rarely observed in the lower animals. Kinsley reports one from the lung of a dog and, while others have undoubtedly been encountered, careful search through the literature fails to reveal any other case reports of tumors of this nature. With such meager clinical material it is impossible to assemble anything of statistical value that would show the relationship of species, sex, age, color, etc., to its occurrence. No doubt it is one of the rarest tumor formations.

Effects on the individual: Here again we are hampered, due to the lack of clinical data, and must resort to a summary of the facts as given in the available literature and to a presentation of the data from the one case that has come under our observation. Ewing remarks that in the human the formation of multiple nodules or of flat elevations on the pleural surface usually results in chronic pleurisy with adhesions. With the enlargement of the growths a corresponding encroachment upon the lung is apt to result in a distressing respiration, especially when the animal is subjected to strenuous exercise.

The view is held by many that the only injurious effects from these neoplasms is mechanical, due to pressure exerted upon the adjacent soft tissues. This was very evident in the case we observed. In this animal the main unit of growth encroached upon the common carotid arteries and the jugular veins (figure 1), with a resulting congestion evidenced by the edematous condition of the ventral thoracic wall, which extended from the cariniform cartilage to the middle portion of the abdomen (figure 2). This was the most noticeable abnormality. The animal remained in fair condition and ate and drank as usual, although there was a slight disinclination to move more than was necessary.

It is our opinion that these tumors are dangerous, more from pressure interference than from any systemic effect, such as one would expect from carcinoma or sarcoma, which exert their malignant influence by actual invasion and destruction of the parenchyma of the vital tissues.

Metastasis and malignancy: From the available data there is very little evidence of metastatic activity on the part of these tumors. Some authors claim that they never metastasize, while others hold the view that metastasis is possible and does occur. In our case there was no evidence whatever of a metastatic involvement of any of the tissues, although the intimate relationship of the tumor with the large blood vessels, together with the abundance of cells undergoing mitosis, could easily have made a generalization possible if the neoplasm had possessed the necessary aggressiveness. Since multiplicity is one of the commonest characteristics reported, a spread within a short radius must necessarily take place, although the correct explanation of this manifestation would be difficult and in attempting a hypothesis one guess is as good as another. However, in view of the evidence against metastasis this might be explained by the

dissemination of the tumor cells over the surface of the pleura, as probably results from the friction of the lung against the nodule, or by a simultaneous origin of the new-growths at a number of different points.

As to malignancy, tumors of this type might be said to be as malignant as their size and position permits for, as brought out in a preceding paragraph, these formations are usually detrimental to the well-being of the individual by their mechanical

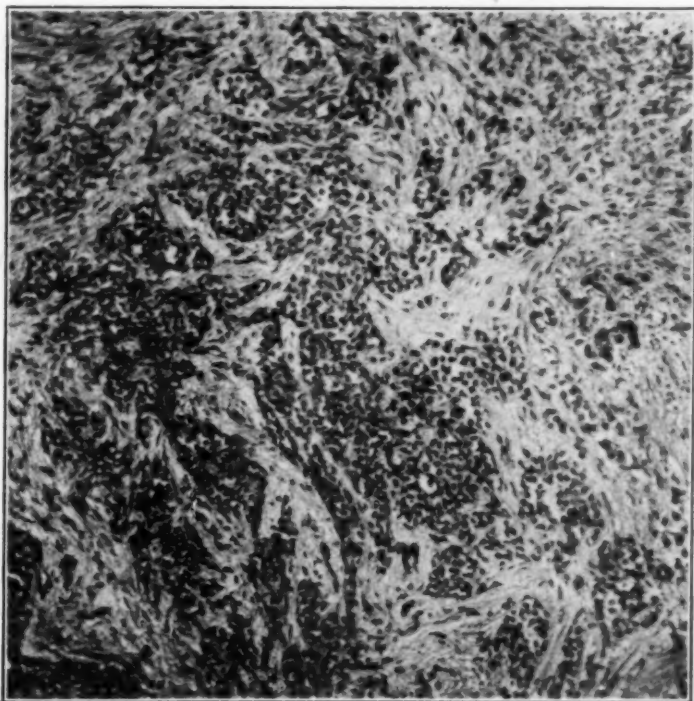


FIGURE 3. Malignant mesothelioma. Low power view, showing large amount of stroma and lack of symmetry of the structural design.

encorachment upon the vital parts with which they may be in close association.

Gross characteristics: There are apparently but few constant features that identify the pleural mesothelioma in its gross anatomy. In size and shape a great variability exists, although when found on the parietal pleura they are usually flat or nodular formations, with irregular contours and measuring from 0.5 to 2.5-3.0 centimeters in diameter at their greatest dimension. They are seldom encountered singly, multiplicity being the

rule. In size the tumor we reported in the above case was very unusual, in that the largest mass weighed 900 grams and had a circumference of 55 centimeters. This was in addition to the smaller nodular formation upon the costal pleura. Ewing says that the entire surface of the pleura of both sides may be involved and that the growths may be so large and diffuse as to cause complete obliteration of the cavity. The color is usually described as being a dirty white, although this may vary with the degree of inflammatory exudation present.

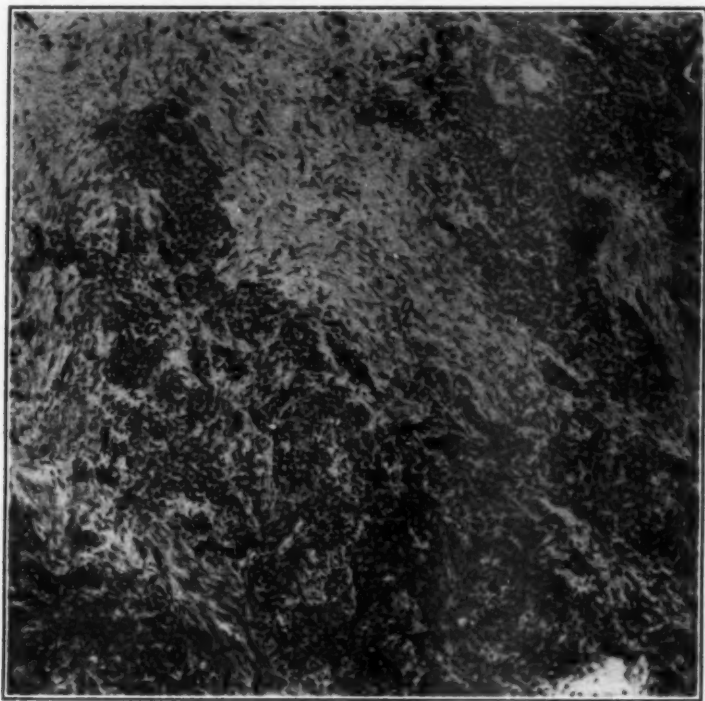


FIGURE 4. Malignant mesothelioma. Low power. This shows the firm texture of the stroma and the compactness of the tumor cells.

In consistency these tumors are rather firm and do not yield readily to traction. In fact they usually contain enough fibrous stroma to ensure a rigidity of structure that is comparable to some of the benign connective tissue tumors. For the most part the pleural mesotheliomata are compact, closely knit masses of much firmer consistency than the vital organs upon which they frequently advance. These growths are always encapsulated by a well-defined capsule, which consists of a deflection of the serosa of the region. The capsule, however,

does not appear to have any particular restraining influence upon their expansion and the formation of new nodules. A pedicle is never observed and the blood supply does not appear to be excessive. From the available information these tumors appear to be rather slowly growing structures, although it must be admitted that the data on this point is scant. In our material there was a good deal of evidence to show that the tumor cells were more or less prolific, as mitotic figures were quite prevalent.

Microscopic description: The majority of mesotheliomata described have consisted of a fairly abundant fibrous stroma,

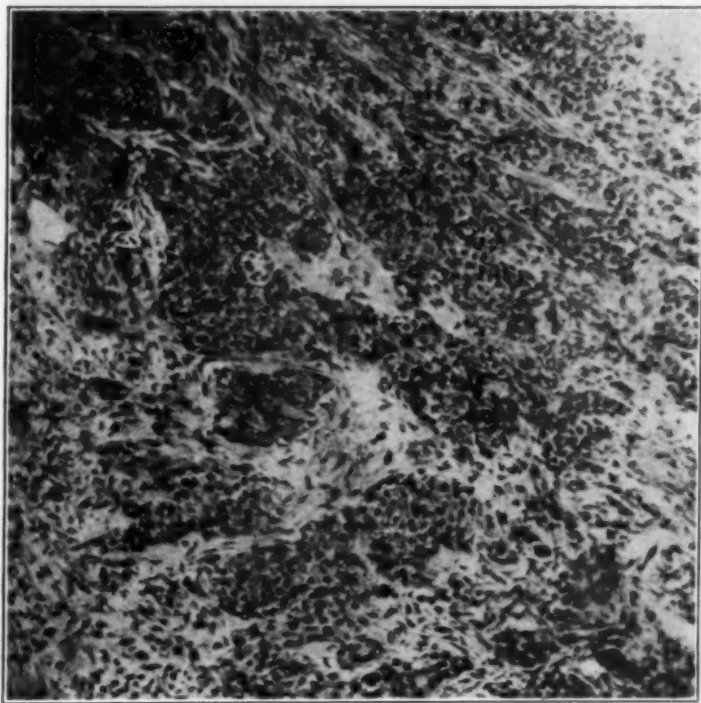


FIGURE 5. Malignant mesothelioma of the pleura. Low power view, showing the alveolar arrangement of the stroma and the nests of tumor cells closely associated with same.

arranged in such a manner as to form quite definite alveoli, within which occur the tumor cells.

Some fields are apt to show the tumor cells arranged in compact rows, due to the plane in which the tissue is cut. The material we have examined has been characterized by the alveolar type of structure.

For the most part the cells are in intimate relation with the connective tissue of the stroma and in many instances the exact

line of separation is not clear, which fact would indicate an infiltrative type of growth. The amount of connective tissue appears to vary, being scant in some areas and quite abundant in others. For the most part the fibrous stroma is not very cellular and considerable interlacing of the strands is common. The mesothelial cell in these tumors presents considerable variation as to appearance, although it is usually irregularly spherical to somewhat flattened, with a minimum amount of

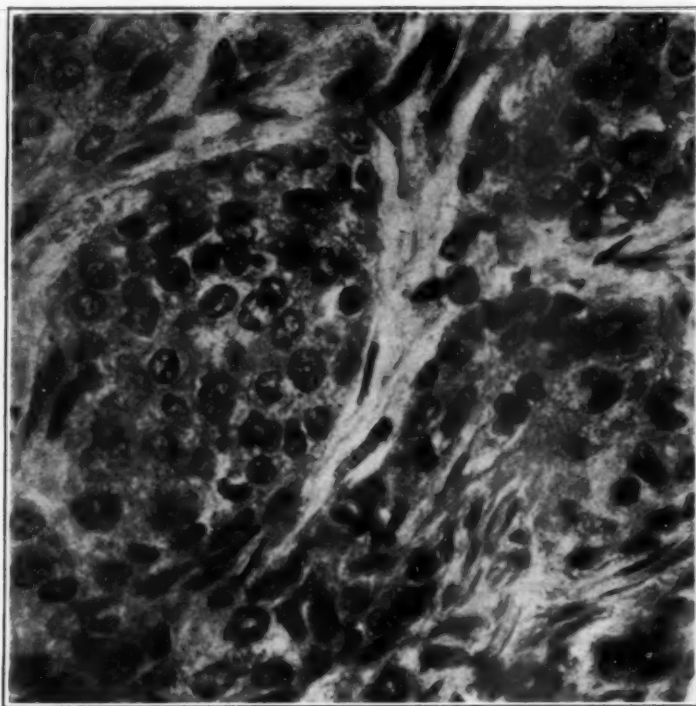


FIGURE 6. Mesothelioma of pleura. High power view. This shows the alveolar-like structure and the tumor cells, nuclei, etc.

cytoplasm which appears finely granular, although occasionally a cell with a clear cytoplasmic structure is encountered.

As mentioned above the nuclei which take a deep basic stain occupy a considerable portion of the cellular bulk and are very irregular in form and apparently differ in their ability to stain. While the majority stain intensely with the basic dyes some are not so affected. Multiple nucleoli are easily demonstrated and their presence is considered by some as an important aid in diagnosis. Intercellular fibrils do not appear to be present.

Diagnostic characteristics: As value in the diagnosis of this neoplasm the following points should be considered. The location of the primary tumor, being the serosa of the pleura or peritoneal cavity, should suggest the possibility of mesothelioma in tumors of these parts. The compact masses of cells and the alveolar arrangement of the stroma is also important as this is the type of architectural design usually encountered in these

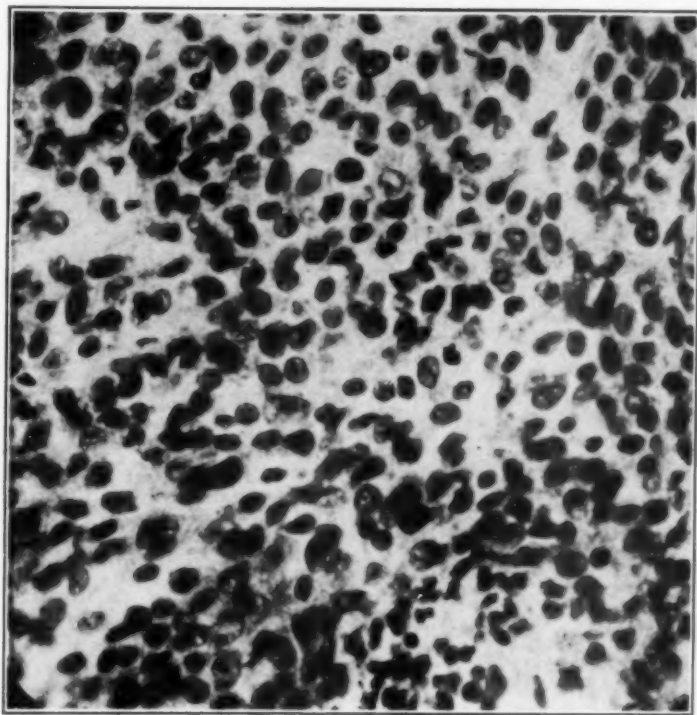


FIGURE 7. Malignant mesothelioma. High power view, showing irregularity of nuclei.

growths. Lastly, the polyhedral cells, the nuclei of which usually possess multiple nucleoli, are considered of especial importance.

ACKNOWLEDGMENT

The writer desires to express his appreciation to Dr. James Farquharson, of the Department of Anatomy, Colorado Agricultural College, who identified the anatomical landmarks in figure 1.

REVIEWS

LABORATORY DIAGNOSTIC METHODS. John A. Kolmer, Professor of Pathology and Bacteriology, and Fred Boerner, Associate in Bacteriology, Graduate School of Medicine, Univ. of Pennsylvania. 325 pages. D. Appleton & Co., 1925. Price \$2.50.

This book just from the press aims simply to present in a concise manner the technic of various laboratory tests in clinical, pathological, bacteriological and serological methods, as at present employed in the Department of Pathology and Bacteriology of the Graduate School of Medicine in the University of Pennsylvania. While *primarily* useful for physicians and laboratory technicians in human medicine much in the book can be utilized in teaching laboratory diagnosis to veterinary students and by veterinary research and diagnostic laboratories.

Many procedures outlined in the sections on examination of the blood, urine, feces, clinical bacteriology and serology, have a direct application to veterinary medicine, while other sections offer a working basis for a much needed study of the value of certain tests, as used in the diagnosis of human diseases, when applied to the diagnosis of animal diseases.

Dr. Fred Boerner, co-author with Dr. Kolmer, is a graduate of the Veterinary School of the University of Pennsylvania and is now Associate in Bacteriology in the Graduate School of Medicine of that Institution. Previous to his present location he was Director of the Laboratories of the Pennsylvania State Bureau of Animal Industry.

F. M. H.

PRINCIPLES OF VETERINARY SCIENCE. Frederick B. Hadley, D. V. M., Professor of Veterinary Science, University of Wisconsin. Second edition, entirely reset. 12mo, 550 pages, with 123 illustrations. Philadelphia and London, W. B. Saunders Co., 1924. Cloth, \$4.00 net.

According to the author, "veterinary science for agricultural students at best can be nothing more than an abbreviated course designed especially for prospective animal husbandmen and those interested in the study of general science." The very fact that veterinary science courses, as usually taught to

agricultural students, are apt to leave the impression that the subject is one that can be satisfactorily (to the student) abbreviated, makes the subject a difficult one to present in the form of a text-book. Dr. Hadley has attempted this difficult task, and his experience of seventeen years of teaching in agricultural colleges has well qualified him for this work.

The present book is an outgrowth of the author's former publication, "The Horse in Health and Disease," and this fact will account for the prominence that appears to be given the horse in many parts of the book. The subject matter in this edition has been greatly amplified, however, 155 pages having been added. Part I is devoted to anatomy and physiology, and Part II to the common diseases of animals. Students in animal husbandry will derive great benefit from the proper study of the structures of the animal body and their functions, particularly as they form the basis for judging capacity and productivity.

In the discussion of diseases, some of the space devoted to treatment might have been given to prevention. For example, the McLean County system of swine sanitation, which is not mentioned in the book, could be presented to good advantage in connection with the subject of worms in pigs. Also, a brief discussion or an outline of the present tuberculosis eradication campaign would add considerably to the value of the chapter on tuberculosis. Many errors of spelling, grammar and punctuation occur throughout the book. Specific names for parasites and microorganisms are not italicized. Exception could be taken to some of the statements made by the author, *e. g.*, that the dog is the sole carrier of the virus of rabies (p. 265).

ABSTRACTS

ACTIVE IMMUNIZATION AGAINST HOG CHOLERA. Original Method of Vaccination. Rafael Salazar Becerra. Rev. de Hig. y San. Pec., Madrid, xiv (1924), 11-12, p. 757.

After reviewing the vaccination of hogs by the serum-alone and simultaneous methods, the author states that he was led to believe it necessary to study the virus in relation to its infective power for ten kilos of animal. In testing the virus it was noted that doses which were fatal for some pigs were immunizing doses for other pigs of the same lot, and that it was not possible

to infect these latter pigs later, with ten times the fatal dose, nor by feeding them material contaminated with virus. This demonstrated that it is possible to obtain an active immunity with virus alone.

"After having determined the minimum infective dose of virus for pigs weighing 50 pounds, we began to immunize sucking pigs with small doses of virus, basing our work on the slight value of these pigs which we believed to be but slightly susceptible, due to their age, and also that, if they came from immune mothers, they would have some passive immunity, even though slight, which would contribute to prevent violent reactions.

"The first sucking pigs were vaccinated with pure virus with an initial dose of $\frac{1}{8}$ or $\frac{1}{4}$ cc, increasing the successive doses up to 1 cc. In the majority of cases the pigs suffered severe reactions, their development was retarded, and they died of hog cholera in the proportion of from ten to twenty per cent. Those which survived remained completely immunized. More than twenty thousand vaccinations were carried on in this way in the last three years.

"The considerable losses (10-20%) during the period of immunization as well as the fact that those pigs which survived were retarded in their development for the first few months, in comparison with non-vaccinated pigs of equal age, made me think of the attenuation of the virus for the first injections, being able later to inject it pure and without risk. This I believe I have been able to obtain, judging from the innumerable vaccinations which have been carried out. I omit the description of these vaccinations but will relate one which I believe we may consider as the most instructive.

"Of 270 sucking pigs, vaccinated with attenuated virus between 10 and 20 days of birth, almost all reacted in from 7 to 10 days after the first injection. Four got seriously sick, and three of these died of hog cholera, as verified by autopsy. On the second injection of vaccine of the same attenuation but with double the dose, more than one-third of the pigs reacted and one died, showing characteristic lesions of hog cholera. The pig which died was not the surviving sick pig from the first injection. The third injection, consisting of pure virus, was supported without any appreciable reaction. From these vaccinated pigs there was separated out a lot of 10 pigs, which, instead of receiving the dose of 1 cc of virus, were injected with 4 cc of pure virus, without hog cholera developing in any of

them. On the same day in which the pigs received the injection of pure virus, four normal 50-lb. pigs were injected with 3 cc of the same virus. All of these sickened and three were killed which showed a temperature 105.8 to 106.6° F., and on autopsy showed lesions of hog cholera. The remaining pig survived.

"The mothers of these pigs came from various herds which had suffered from hog cholera at a previous time, more or less remote.

"At the time of vaccinating the pigs, two other sows on the same place gave birth to pigs which were not vaccinated. These non-vaccinated pigs, on coming in contact with the others, became infected and died.

"The 266 pigs which survived the vaccination suffered virtually no setback in their development, and 4 months after were transported to infected premises, living with animals suffering from hog cholera without any of them becoming infected.

"Among other experiences, it is necessary to point out that along with a lot of vaccinated pigs, coming from naturally immune sows, there were vaccinated nine pigs coming from sows which had never been sick. Among the first pigs (from immune sows) there were no losses, but the other pigs as well as the sows died of hog cholera.

"The results pointed out, which are only a small part of those which we had had occasion to observe, justify us in continuing with the procedure of attenuation and vaccination which we are employing.

"We attenuate our vaccine by dilution and heat, preserving it with carbolized glycerin and giving it an expiration date of only eight weeks. The first injection, practiced within 10 to 20 days of the birth of the pigs, consists of 1.0 cc of virus which has been diluted 25%. Twelve days later the second injection is given consisting of 1.0 cc of 50% diluted virus, and finally, after another 12 days, 1.0 cc of pure virus is given. That is to say, the first dose is 0.25 cc of virus, the second 0.5 cc and the third dose is 1.0 cc, but in each instance the dose injected is diluted up to 1.0 cc

"As will be noticed, the technic could not be more simple and, from an economic standpoint, the price of the treatment does not exceed one peseta (normally about 19 cents American) per head.

"From our method of immunization the following conclusions may be drawn:

1. Immunization with virus alone is possible, at least in sucking pigs.
2. In spite of its attenuation the virus maintains its infectivity.
3. The pigs, after receiving the injections of attenuated virus, have developed protective antibodies which prevent their becoming infected on receiving the non-diluted virus.
4. The immunity obtained is solid and lasting.
5. Sucking pigs treated in this way eliminate with their secretions infective virus which is capable of producing hog cholera in normal pigs.
6. Breeding sows should be selected from those naturally immunized, or they should be previously vaccinated with serum and virus.
7. The method which we describe is simple in application, economical, and also of a positive practical utility."

H. K. W.

UBER DAS WORKKOMMEN VON SPEZIFISCHEN AGGLUTINININ UND AMBOZEPTOREN NACH IMPFUNGEN MIT LEBENDEN UND ABGETOTITEN BANGSCHEN ABORTUS BAZILLEN IM BLUTE VON RINDERN (Concerning the Appearance of Specific Agglutinins and Amboceptors in the Blood of Cattle after Injection with Living and Killed Cultures of *Bact. abortus* Bang). Fritz Fargel. Deutsche Tierartz. Wochn., xxxii (1924), p. 598.

As a result of a series of experiments, the author comes to the following conclusions:

1. The amount of antibodies held in the blood of cattle is larger, following the injection of living abortion bacteria, than after the injection of dead cultures.
2. After the injection of living abortion bacteria, the highest agglutinin and amboceptor content noted was between 1-400 to 1-1600 and 0.005 to 0.001 respectively. The highest titre was reached 21 days after the second or third injection.
3. After the injection of killed abortion bacteria the titre of the agglutinin and amboceptor was between 1-200 to 1-400 and 0.01 to 0.005 respectively.
4. The diagnosis of infectious abortion on the basis of the blood tests cannot be accurately carried out for a period of six months after the injection of the living organisms and 3½ months after the injection of the dead organisms.

5. If, following the injection of living or dead cultures of *Bacterium abortus* Bang, the agglutination and complement-fixation antibodies rise immediately, to 1-1600 and 0.001 or to 1-800 and 0.002 respectively, this is an indication of natural infection with *Bact. abortus* Bang. Further work is being done on this point.

6. In animals which show a maximum agglutination and complement-fixing antibodies, following the injection of bacterins and vaccines, a higher titre is obtained than in those animals which are not naturally infected.

C. P. F.

ZUR DIAGNOSTIK DER GEFLUGELTUBERKULOSE (Diagnosis of Avian Tuberculosis). M. G. Sliwensky. Tierärztliche Rundschau, xxx (36), p. 612.

As a result of a rather extensive series of observations, the author comes to the following conclusions in regard to the work:

The investigation of five flocks, for the presence of fowl tuberculosis, showed that in one flock of 214 fowls, 30 per cent were affected; in another flock of 80, 83.7 per cent were affected; in the third flock of 50, 90 per cent were affected; the fourth flock of 95 showed 89.5 per cent to be affected, and fifth flock of 18 showed that 89 per cent were affected. On postmortem examination, tuberculosis of the liver was found, in one flock of 22 fowls, in 90.8 per cent of the cases, and in a second flock of 50 hens in 72 per cent. Tuberculosis of the spleen was found to be the next most common lesion. In one flock of 22 hens, tuberculous spleens were found in 54.4 per cent and in three flocks of 50 hens each, tuberculous spleens were found in 48 per cent of the cases. Tuberculosis of the intestines was also a common lesion. These were found in 32 per cent and 40 per cent of the birds autopsied in two different flocks. Tuberculosis of the lung was found much less often, on an average of $7\frac{1}{2}$ per cent of the cases. Tuberculosis of the kidney was found only once; tuberculosis of the trachea once; tuberculosis of the cloaca twice and a tuberculous eye once.

C. P. F.

THE DOCTOR IS SUCH AN APPETIZING SPEAKER

(From the Constantine, Mich., News)

During the dinner, Dr. George McCollister will speak on swine disease, parasites, and infection.

COMMUNICATION

THE PORTLAND A. V. M. A. MEETING

TO THE EDITOR:—

There are several of us who would prefer to go to the Portland meeting of the A. V. M. A. through the scenic wonderland of the Canadian Rockies, making short stops at Banff and Lake Louise, the most famous of the Canadian mountain resorts. On arriving at Vancouver we will take a steamboat to Seattle, a delightful all-day trip, stopping at Victoria. There is no increase in cost by this route. Friends who have made this trip consider it the most magnificent of the transcontinental routes.

If we get a party of twenty or more from Chicago, a special Pullman will be provided. If any readers who are interested in joining this party at Chicago, St. Paul, or any point en route, will send me their names, a detailed itinerary of the trip and full information will be sent.

N. S. MAYO.

Chicago, Ill., February 3, 1925.

FOR ANTHRAX CONTROL

On February 16, 1925, Senator Harrison, of Mississippi, introduced Senate Joint Resolution 185, reading as follows:

Resolved, etc., That the Secretary of Agriculture is authorized to expend for the arrest and eradication of anthrax, such sum, not in excess of \$100,000, from unexpended balances of appropriations heretofore made for the use of the Department of Agriculture in the arrest and eradication of foot-and-mouth disease, rinderpest, contagious pleuropneumonia, or other contagious or infectious disease of animals, such sum to remain available until expended.

GLAND GRAFTING IN WEST AFRICA

It is reported that Dr. Serge Voronoff, of rejuvenation fame, is at the head of an expedition which recently sailed for West Africa, for the purpose of instructing physicians and veterinarians in the art of rejuvenation. Herds of cattle and sheep in the French colonies will be the subjects of Dr. Voronoff's gland grafting operations.

ARMY VETERINARY SERVICE

CHANGES RELATIVE TO VETERINARY OFFICERS

Regular Army

Captain Chas. S. Williams, V. C., relieved from duty at Fort Hoyle, Maryland, and sailed on Jan. 28, 1925, from New York City for Hawaii for duty in that department.

Captain Joseph N. Hornbaker, V. C., was retired January 3, 1925, on account of disability incident to the service and ordered to proceed to his home.

Captain R. P. McComb, V. C., transferred from Fort Humphreys, Va., to Fort Bliss, Texas, January 14, 1925, for duty.

Lt. Colonel Robert Vans Agnew, V. C., is assigned to duty at Fort McPherson, Georgia, on completion of his present tour of duty in the Philippine Islands on or about March 1, 1925.

Captain F. H. K. Reynolds, V. C., relieved from further temporary duty as a student at the Army Veterinary School, effective February 10, 1925, and will report to the Commandant, Army Medical School, for duty.

Captain J. W. Worthington, V. C., is relieved from further duty at Reno Q. M. I. D., Fort Reno, Oklahoma, effective March 27, 1925, and will report to the Commanding Officer, Fort Sam Houston, Texas, for duty.

First Lieutenant James L. Barringer, V. C., on duty with the 2nd Division, Fort Sam Houston, Texas, will report on or about March 28, 1925, to the Commanding Officer, Reno Q. M. I. D., Fort Reno, Oklahoma, for duty.

Veterinary Reserve Corps

Additional Reserve Officers

Majors:

Bartholomess, George Ernest, Sheldon, Missouri.
Brod, William..... R. D. No. 2, Glenshaw, Pennsylvania.
Green, Fred Brinkmyere..... Greenup, Illinois.

Captains:

Buck, Floyd Leroy..... Grand Junction, Iowa.
Foreman, Ernest J..... 135 N. Maple St., Trinidad, Colo.
Gerard, Russell S..... 411 W. Pleasant Valley Street, Sigourney, Ia.
Ronsse, August Joseph..... 140 S. Broadway, Turlock, Calif.

First Lieutenants:

Hamman, Fred I..... Box 90, Collbran, Colo.
Knapstein, Theo. Lawrence.. Greenville, Wis.
Lowenberg, Robert Irving... 515 Union St., Emmetsburg, Iowa.
Miller, Ezra William..... 22 N. Braddock St., Winchester, Va.

Second Lieutenants:

Smith, Samuel Aker..... Talmage, Nebraska.
Stricker, Charles Louis, Jr.... 4000 Davis Avenue, Cincinnati, Ohio.

CHANGES IN STATUS

Promotions

Bradbury, Dean Dallas, Fairbanks, Indiana, promoted to Captain, Vet-ORC.
Moore, Frederick Yorke, 715 S. 2nd Street, McAlester, Okla., promoted to Captain, Vet-ORC.

Matter, Anthony Joseph, Crystal Lake, N. D., promoted to 1st Lieut., Vet-ORC.

CAPTAIN KELSER ON RESEARCH BOARD

On December 18, 1924, the War Department issued an order detailing Capt. Raymond A. Kelser, V. C., U. S. Army, to the Philippine Islands for duty as a member of the U. S. Army Medical Department Research Board. This is the first time that a veterinary officer has received such an assignment.

A board consisting of three medical officers was first established in the Philippine Islands in 1900 for the study of tropical diseases. This body continued its investigations extending over a period of thirteen years. During this time a number of outstanding members of the Medical Corps served on this Board, and a considerable number of valuable contributions to medical science was made by them. Many of these contributions have since



CAPT. R. A. KELSER

proved to be of great scientific as well as practical value in all parts of the world.

In January, 1922, the present Board now operating in the Philippine Islands was organized. At present its membership is limited to five officers of the Medical Department. The naming of a veterinary officer as a member of this Board is concrete recognition of veterinary service, and a very distinct compliment to the Veterinary Corps of the Army as well as the veterinary profession.

Capt. Kelser will sail from New York, March 4, arriving in San Francisco about March 21. From there he will sail for Manila. Capt. Kelser will be succeeded as Chief of the Veterinary Laboratory Section of the Army Medical School by Capt. F. H. K. Reynolds, V. C., U. S. Army.

ASSOCIATION MEETINGS

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION

The adjourned meeting of the California State Veterinary Medical Association, held in Pasadena, December 29-30-31, 1924, took on the form of a celebration or jubilee meeting, whichever one prefers to call it, in celebration of the stamping-out of foot-and-mouth disease in California. The meeting, although at an off time, as compared with other meetings, was sufficiently well attended, there being 102 enrolled. The papers were of such excellent quality and led to such spirited and interesting discussion that it is impossible, without taking up each in detail, to give the selection to the ones that are best without slighting someone.

The part of the program which was held on January 30, a small animal clinic at the Small Animal Sanitarium of Dr. T. H. Agnew, deserves special mention since Drs. White, Boucher and Claussen performed principally diagnostic operative work, with the aid of Dr. Agnew and his X-ray fluoroscope demonstration, which pointed out very plainly, to those who were interested in small animal practice, the advantages in diagnosis by the use of both pieces of apparatus.

A very interesting and enjoyable banquet was held at the Vista del Rey Hotel on Tuesday evening. The entertainment consisted of talent from Radio Station KHJ and from among the families of the members of the Association. Every one conceded that this was the most enjoyed banquet they had attended during their knowledge of such events.

A very instructive and enjoyable time was had through the courtesy of the Union Stock Yards, of Los Angeles, the Association being their guests during the morning of December 31 and at luncheon.

Since there is being introduced into the present legislature a new bill regulating the control and eradication of tuberculosis in California, this new bill was read and discussed by Dr. Geo. H. Hart, of Berkeley, and the members in general, using up the greater part of the afternoon.

The election of officers resulted in the election of Dr. L. M.

Hurt, Pasadena, president; Dr. Oscar J. Kron, San Francisco, vice-president; Dr. J. P. Bushong, Los Angeles, secretary; and Dr. Jas. Boyd, San Jose, treasurer.

In view of the Pacific Coast having the honor of entertaining the American Veterinary Medical Association in July, chairmen were appointed by the incoming president, representing each of the regional associations, of which we have five, who are authorized to select from their associations sufficient assistants to boost for attendance at Portland. Our Resident Secretary, Dr. John L. Tyler, is chairman of the standing committee on the A. V. M. A. in our Association.

There being no further business, the meeting adjourned to meet with quorum present, in June, to adjourn to meet in Davis during the Short Course in 1925. This move was taken with the thought in mind that by eliminating our annual June meeting we would enable a larger attendance at Portland.

J. P. BUSHONG, *Secretary*.

UNIVERSITY OF PENNSYLVANIA CONFERENCE OF VETERINARIANS

The conference of veterinarians held at the University of Pennsylvania School of Veterinary Medicine, January 6-7, 1925, is considered by those who have been attending the conferences regularly as equal to if not the best held up to this time. It is estimated that 200 veterinarians were in attendance.

The morning session of the first day was opened at 10 a. m., by Dean Louis A. Klein. His address of welcome was followed by a paper on "The Basis of Symptoms in the Nervous Form of Dog Distemper," illustrated by lantern slides showing the microscopic structure of the brain and spinal cord, given by Dr. S. A. Goldberg, N. Y. State Veterinary College, Cornell University.

The next number on the program was "A Summary of Results of Treatment of 800 Cases of Azoturia," by Dr. V. G. Kimball, followed by a report on an operation for hygroma of the knee of cattle, by Dr. John W. Adams.

The afternoon session was opened with a paper on "White Diarrhea of Chicks and Its Control," by Dr. F. R. Beaudette, Poultry Pathologist, N. J. Experiment Station. This was followed by an operation, consisting of the suturing of lacerated perforatus and perforans tendons in the hind leg of a pony, and a

demonstration of chloroform anesthesia, by Dr. John W. Adams.

In the evening, Dr. Ulysses G. Houck, of the U. S. Bureau of Animal Industry, Washington, who had charge of the eradication of aphthous fever in California, related the history of this outbreak and some of his personal experiences, which were very interesting. In connection with his talk moving pictures were shown, illustrating many phases of the work of eradicating this disease. These pictures were splendid and many believe that they should be shown in every moving picture house in this country. Following Dr. Houck's lecture the assembly adjourned to Pearson Hall, where all enjoyed a buffet supper and smokes.

The following papers were given on the morning of the second day: "Hemorrhagic Septicemia Aggressin," by Dr. William S. Gochenour, of the U. S. Bureau of Animal Industry, Washington; "Principles of Immunity and Biologic Therapy as Applied to Veterinary Medicine," by Dr. John A. Kolmer, Graduate School of Medicine, University of Pennsylvania. A lecture on "Vitamins in Animal Nutrition," illustrated, by Dr. R. Adams Dutcher, State College, Pa., concluded the morning program.

The afternoon session was opened with a lecture on "The Relation of the Calf to the Spread of Abortion," by Dr. F. M. Hayes, University of California. This was followed by a paper on "Bovine Abortion and Its Control," by Dr. M. F. Barnes, Pennsylvania Bureau of Animal Industry. And last, "Abortion from the Breeders' Standpoint," by Percival Roberts, Jr., owner of Pennshurst Farm and a breeder of pure-bred Ayrshires, Narberth, Pa. Mr. Roberts very ably presented this subject.

Every paper on the program was of exceptionally high quality and was greatly appreciated by all those who attended the conference.

G. A. D.

OHIO STATE VETERINARY MEDICAL ASSOCIATION

The forty-second annual meeting of the Ohio State Veterinary Medical Association was held at the Deshler Hotel and the Ohio State University, Columbus, January 7-8, 1925. In place of the three-day meeting and dinner session, the meeting this year consisted of two daylight sessions and an evening session.

The subjects which were discussed were sufficiently varied to enable men in all lines of work to obtain some valuable informa-

tion. The pleasing manner in which the various talks and papers were delivered made the meeting of more than usual interest and brought forth many favorable comments.

On the evening of the 7th a regular session was held at the Deshler. Topics of vital interest to the profession and to the state were very ably presented. The various standing committees are to be commended for the very excellent reports rendered, a few being given at the evening session.

The program for the second day was so arranged as to combine the reading of papers with clinical demonstrations. The attendance was very good at every session and, judging from the interest shown and the attention accorded the speakers, the meeting was considered a very successful one.

Speakers from out of the state were as follows: Dr. L. A. Merillat, President of the A. V. M. A., Chicago, Ill.; Dr. D. H. Udall, New York State Veterinary College, Ithaca, N. Y.; Dr. W. L. Boyd, University of Minnesota, St. Paul, Minn.; Dr. C. H. Covault, Iowa State College, Ames, Iowa; Dr. A. S. Schlingman, Research Pathologist, Parke, Davis & Co., Detroit, Mich.

The following are the names of the men elected to serve as officers of the Association during the present year: Dr. S. R. Craver, president, Youngstown; Dr. P. T. Engard, vice-president, Marysville; Dr. D. C. Hyde, treasurer, Columbus; Dr. W. R. Hobbs, secretary, Columbus. Executive Committee: Dr. W. F. Wise, Medina; Dr. F. A. Zimmer, Columbus; Dr. Harry Fulstow, Norwalk.

W. R. HOBBS, *Secretary.*

MAINE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Maine Veterinary Medical Association was called to order by the president, Dr. E. E. Russell, of Farmington, Maine, at 2 p. m., Jan. 15, 1925, at the Elmwood Hotel, Waterville, Me.

A legislative committee was appointed by the Chair consisting of Drs. M. E. Maddocks and J. B. Reidy, together with Hon. H. M. Tucker. The annual report of the secretary-treasurer, Dr. A. J. Neal, was accepted, subject to the approval of the auditing committee.

By a unanimous vote the present officers were re-elected for the coming year, viz: Dr. E. E. Russell, of Farmington, president;

Dr. C. L. Ryan, of Dexter, vice-president; Dr. A. J. Neal, of Bangor, secretary-treasurer.

Resolutions were presented and records spread on the minutes of this meeting on the deaths of brother members: Drs. W. H. Robinson, of Portland, and N. W. McCaughey, of Presque Isle. Copies were sent to the families of said deceased members.

Dr. C. L. Ryan gave an interesting account of traumatic pericarditis; Dr. A. J. Neal discussed an interesting case of generalized bovine tuberculosis; Dr. W. H. Corey, of Newport, whose hobby during his spare moments is using a bucksaw, a la Roosevelt, reported that an unknown party appeared at his clinic recently and asked to borrow a bucksaw, whereas the good natured Doctor allowed his valuable bucksaw to be loaned, and has not yet seen the precious saw, nor the borrower. In case the Doctor becomes real obsessed the reason shall be known—he lost his bucksaw.

On motion of Dr. C. L. Ryan the members of the State Board of Veterinary Medical Examiners were named as a committee to frame a law governing the sale of biologics in the State.

On motion of Dr. Neal the Chair was ordered to appoint a committee to draft a standard outline of prices for tuberculin testing, in area work. Dr. M. E. Maddocks, together with Drs. P. R. Baird and A. J. Neal were appointed on this committee.

Hon H. M. Tucker, Chief of the Division of Animal Industry, State Department of Agriculture, explained his recent poultry quarantine order, stating that he would issue a permit for the shipment of live poultry into Maine, provided the shipper would furnish a statement by an approved veterinarian, stating that such flock was free from disease.

Portland, Maine, was selected as the next meeting place, the second week in April, after which the meeting adjourned to partake of a banquet provided by the State Fair Association members, which was a brilliant affair, both from the standpoint of the menu as well as the entertainment.

J. B. REIDY, *Resident Secretary for Maine.*

MARYLAND STATE VETERINARY MEDICAL ASSOCIATION

The annual meeting of the Maryland State Veterinary Medical Association was held at Medical Hall, Baltimore, Maryland, on January 15, 1925, with forty-one members in attendance.

The meeting was called to order by the President, Doctor C. M. Grubb, of Rockville, Maryland. After a short but eloquent address of welcome by the Chair, Doctor A. W. Miller, Chief of the Field Inspection Division of the United States Department of Agriculture, was introduced as the first speaker on the Program. The subject of his talk was, "Recent Outbreaks of Foot-and-Mouth Disease." During the California and Texas outbreaks, as Chief of the Quarantine Division of the Department, he was in close touch with the situation at all times, and was, therefore, in a position to give us a real treat, which he proceeded to do. He gave a most instructive account of the two outbreaks, including, among other things, the organization of the force; the placing of the men in the field promptly; the cooperation of the State and Federal forces; the field inspection; the slaughtering and buying of cattle; disinfection of infected premises; quarantines, and last, the lesson learned from the two outbreaks. The paper was followed by a very interesting twenty-minutes discussion.

The second paper was entitled, "The Pitfalls of the Tuberculin Test," and was presented by Doctor E. B. Simmonds, of the United States Bureau of Animal Industry. In developing his subject, Dr. Simmonds stressed the importance of careful technic in conducting the test. He also dwelt at length on the advisability of early retests in infected herds, to prevent the spread of the infection by animals not reacting at the first test. His interesting paper was also followed by an animated discussion.

The last paper of the morning session dealt with "Uterine Infections of the Canine." It was most ably presented by Doctor E. B. Diebbell, of Baltimore. Special emphasis was placed on the differential diagnosis between certain of these inflammations and ascites. A method of operative treatment was also outlined.

Immediately after lunch, Doctor H. A. Meisner, of Baltimore, presented a paper on "Azoturia." A review of the literature on the subject was given, with emphasis placed on the different treatments which have been used for this disease in years past. The author's present method of handling it was also outlined. This is reported to be giving fairly satisfactory results.

The next paper was on "Invagination of the Rectum of the Horse." It was given by Doctor R. V. Smith, of Frederick. Doctor Smith stressed the importance of obtaining the cases

early and making a careful diagnosis. He also outlined the method of procedure he employs in these cases.

The last paper was presented by Doctor C. M. Grubb, of Rockville. It dealt with "The Handling of High Fractures of the Legs of Dogs." Doctor Grubb outlined the procedure to be employed in setting the leg, bandaging, and the after-treatment of the animal. The subject was very well handled.

After the presentation of the above papers, a short business meeting was held, at which the following officers were elected: Dr. C. M. Grubb, Rockville, president; Dr. J. W. Hughes, Amendale, vice-president; Dr. E. M. Pickens, College Park, secretary-treasurer, and Dr. Hulbert Young, Baltimore, member of the Executive Committee.

E. M. PICKENS, *Secretary.*

SEVENTEENTH ANNUAL CONFERENCE FOR VETERINARIANS AT CORNELL UNIVERSITY

The seventeenth annual conference for veterinarians at the New York State Veterinary College at Cornell University was held January 15-16, 1925.

The conference was held in the amphitheatre of the new south wing of the main building. This was the first meeting to be held in the new amphitheatre and was, in a sense, an unofficial dedication of the wing. This room has a seating capacity of 354 and it is fortunate that it was available, for the attendance was too large for the capacity of the large lecture room in which the conference has been held in former years. The new room is fully equipped, even to a fire-proof booth for moving-picture machine and ordinary lantern. The new equipment contributed in no small way to the success of the conference.

Dr. V. A. Moore opened the session of the first morning with a talk, illustrated by charts, on "The Outlook for Veterinarians Determined by the Number of Students, Number of Animals and Their Value." The talk and charts indicated that the number of animals and their value is very much out of proportion to the small number of students registered in American veterinary colleges. Such a condition is seen to presage a balance in favor of the veterinarian.

Drs. H. L. Gilman and R. R. Birch presented a paper on "A Mould Associated with Abortion in Cattle." Dr. Gilman read this paper. As further evidence of valuable research being carried on by these two workers at the experiment station

connected with the College, Dr. Birch read a paper, "The Channels of Infection by *Bacterium Abortum*, with Special Reference to Ingestion." The influence of ingestion on infection with this disease was vividly shown in lantern-slide charts used in connection with the paper.

Drs. D. H. Udall, M. G. Fincher and E. R. Cushing presented "Vital Statistics from the Ambulatory Clinic." Material for the paper had been gathered in clinical work and the records kept and arranged in charts and graphs gave the audience a clearer insight into conditions met with in abortion and sterility disease and its manifestations.

Attention to tuberculosis was given by Dr. Charles Linch, of the New York State Department of Farms and Markets, in a paper, "Tuberculin Testing by Accredited Veterinarians," and by Drs. C. M. Carpenter and S. A. Goldberg, with "A Study of Skin Tuberculosis." Dr. Carpenter read a short paper on the subject and Dr. Goldberg discussed the lesions by means of lantern slides. Considerable interest in these two papers was shown in the discussion led by those interested in tuberculosis eradication work.

The afternoon session opened with a paper, "The Endocrine System and Growth," by Dr. P. A. Fish. Dr. Fish is making important contributions to the knowledge of the endocrine system in his studies of the growth curves of entire and castrated goats. The paper was illustrated by lantern slides and by the inspection of two of the animals used in the experimental work, an entire and a castrated male.

The next speaker was Dr. Theobald Smith, of the Rockefeller Institute of Medical Research. His subject was "The Significance of Colostrum in the Prevention of the Diseases of Young Calves." Dr. Smith demonstrated, by argument and lantern slides, the very important part played by the colostrum, with its globulins, in which bodies it is very rich, in establishing immunity in young calves. Dr. Smith spoke before a large audience of those interested in research work at Cornell University, the evening before the conference. His topic was "The Value of Research."

Dr. E. Sunderville illustrated the viscera of the dog *in situ* by means of lantern slides. The photographs were prepared from dissections of dogs in which the viscera had been fixed so that the presentation was that of the animal in the normal standing position. This demonstration was of great interest

to all small animal practitioners. Dr. S. A. Goldberg illustrated "Lesions in the Nervous Form of Canine Distemper" with lantern slides. "Some Common Diseases of Dogs" was the illustrated contribution of Dr. H. J. Milks. The lantern slides used were of marked clinical cases and were the basis of a valuable talk on the subject chosen. Dr. John Reichel was not able to attend the conference and so his paper, "Studies on Rabies Vaccine," was not read. Dr. A. Eichhorn, Dr. S. Kondo, and Dr. F. E. McClelland discussed this topic in the absence of Dr. Reichel.

The Federal Bureau of Animal Industry was represented by Dr. U. G. Houck, who gave a talk in connection with a two-reel film on "Foot-and-Mouth Disease." Special reference was made to the recent outbreak in California and the subsequent abortive one in Texas.

At the evening session President Livingston Farrand welcomed the conference to Cornell University. Dr. Charles G. Tuck, of the Dairyman's League, gave an address on the "Veterinarian and Organized Agriculture."

Dr. John McCartney, on behalf of the alumni, presented the portrait of Dr. P. A. Fish to Cornell University. Dr. McCartney epitomized the feeling of the alumni toward Dr. Fish when he spoke of him as a wonderful teacher and beloved by his students. President Farrand, in accepting the portrait for the University, paid tribute to the many fine qualities of Dr. Fish; his ability as a scientist and teacher, his modesty, and his devotion to his country as shown in his participation in the military force during the World War. Dr. Farrand expressed the hope that Dr. Fish would contribute his ability as a teacher and research worker to the welfare of Cornell University for many years to come. Dr. Fish thanked the alumni for the interest in having the portrait done. Prof. O. M. Brauner, of Cornell University, painted the portrait. It is next to the last of the series of portraits of the original members of the faculty, planned several years ago. That of Dr. G. S. Hopkins is yet to be done. They will hang in the new library rooms in the new south wing.

A smoker was held at the close of the evening program. This is one of the rare opportunities for visiting during the conference and the men avail themselves of it to the fullest extent.

During the morning session of the second day Dr. G. T. Stone emphasized "The Veterinarian's Responsibility to the Community." A paper on "The Economic Value of the Poultry

Industry," by Prof. James E. Rice, head of the Poultry Department of Cornell University, was filled with valuable and interesting information and gave new insight into the part veterinarians might play in the protection of that industry. Dr. E. L. Brunett treated poultry diseases under two heads: (a) "Diagnosis of Bacillary White Diarrhea," and (b) "A New Disease of Chickens in America (Fowl Plague)." Dr. John W. Adams and Dr. J. N. Frost touched on the surgery of large animals. Dr. Adams spoke on "Surgical Diagnosis" and Dr. Frost took as his topic, "Surgical Treatment of Indigestion in Cattle." These papers were highly instructive and deeply appreciated.

Luncheon and alumni meetings at the college were followed by demonstrations and clinics in the afternoon. Space is lacking for the discussion of these features but it is a fact that a great deal of useful information is imparted during the demonstrations and clinics.

The conference is an increasing success each year, as is the annual dinner, held the evening of the second day. More practitioners attended this year than ever before. More attended the annual dinner than ever before. The after-dinner program was an attraction in itself. Dr. John W. Adams, whom the men always want to hear, spoke on "The Future of Veterinary Surgery." Dr. J. G. Ferneyhough spoke on "Opportunities for Veterinarians in the South." To readers among American veterinarians it is not needful to comment on these two talks. Talks by these two men are, and will always be, inspirational and instructive.

C. E. HAYDEN.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION

The Minnesota State Veterinary Medical Association held its twenty-eighth annual meeting at the Hotel Radisson, Minneapolis, January 14-15, 1925, Dr. R. L. West, of Waseca, presiding. The secretary, Dr. C. P. Fitch, was unable to attend, being confined to his bed with an attack of intestinal intoxication, and Dr. H. C. H. Kernkamp acted as secretary *pro tem*.

With the exception of one speaker, the entire program was presented by Minnesota veterinarians. Dr. Maurice C. Hall, of Washington, D. C., conducted a question box on parasitic diseases. This provoked a lively discussion. Dr. C. B. Shore,

of White Bear, veterinarian to one of the largest silver fox ranches in this country, presented a very interesting paper relative to methods of restraining, examining and treating foxes, and called attention to factors which must be considered as a result of the increased excitability of these animals. He supplemented his paper by practical demonstrations on live foxes and mink. A case report on demodectic mange in the goat, including a historical, symptomatological, pathological, epidemiological and therapeutic discussion was presented by Drs. J. G. Hardenbergh and W. Schlotthauer, of the Mayo Clinic.

"Equine Practice" was the caption of a paper by Dr. B. L. Cook, of Farmington. The essayist brought out many interesting facts relative to horse power *vs.* motor power, and urged the necessity for more and better horses. A lengthy discussion followed, indicating a warm spot in the hearts of the veterinarians for "Old Dobbin." Dr. B. A. Pomeroy, of St. Paul, presented some interesting equine case reports which he designated as "Moon-mash Poisoning." A number of horses died following the ingestion of distillery residue.

Dr. R. Fenstermacher, field veterinarian for the State Live Stock Sanitary Board, read a paper on the "Problems Confronting the Field Veterinarian." This was followed by a report of the Committee on Infectious Diseases, presented by Dr. C. E. Cotton, secretary and executive officer of the Sanitary Board. Much interest in these papers was displayed and they were discussed very freely. Everyone thoroughly enjoyed a talk by Dr. R. F. Vermilya, Supervisor, B. A. I., South St. Paul, on the subject of "Foot-and-Mouth Disease." The doctor related his experiences in connection with the recent outbreak of this disease in California.

Under the heading, "The Mysterious Poultry Disease," Dr. R. E. Lubbehusen, Veterinary Division, University Farm, outlined the status of our present knowledge in connection with the outbreak of fowl pest and discussed the differential diagnosis between it and roup, fowl cholera, nutritional diseases, etc. Dr. G. VanDuzee, of Lamberton, read a paper entitled "Some Common Drugs Used in My Practice," and Dr. J. H. Elmes, of Eagle Bend, one on "Indigestion in Cattle." Dr. M. R. Higbee, of Albert Lea, gave some sound advice in a paper headed "Suggestions in Regard to Veterinary Practice." "The Veterinarian in His Community" was the name of the paper by Dr. C. E. Krosch, of Blue Earth.

Dr. C. C. Lyford, of Osseo, one of the first graduate veterinarians to practice in Minnesota, told of some of the characteristics and methods of leading veterinarians of fifty years ago. Dr. R. W. Archibald, State Board of Health, Minneapolis, lead an interesting discussion on the subject of "Milk and Dairy Inspection in Minnesota." Dr. W. L. Boyd, University Farm, conducted a short symposium on the subject of "Abortion Disease." He discussed certain phases relative to the pathology of sterility, and its sequelae; the question of immunity and a comparison between the rates of abortion in dairy and beef breeds.

The Association took definite action and recommended that the summer meeting be held in conjunction with a short course at University Farm. The dates of this meeting were fixed so that it will come the week previous to the A. V. M. A. meeting at Portland. Inasmuch as the Great Northern Railway will be the official route, it was hoped that many of those passing through the Twin Cities, en route to Portland, could attend the short course. The meeting was well attended. Dr. B. L. Cook, of Farmington, was elected president; Drs. W. C. Prouse, of Minneapolis, and Wm. McLaughlin, of Rush City, vice-presidents; and Dr. C. P. Fitch was re-elected secretary-treasurer.

H. C. H. KERNKAMP, *Acting Secretary.*

MISSISSIPPI STATE VETERINARY MEDICAL ASSOCIATION

The nineteenth annual meeting of the Mississippi State Veterinary Medical Association was held in the City Hall, Greenville, Miss., January 20, 1925. The morning session of the first day was called to order by Dr. Wm. P. Ferguson, of Grenada, president of the Association. Rev. Phil G. Davison delivered the invocation and the address of welcome. To the latter Dr. K. U. Jones, State Veterinarian of Mississippi, responded.

Dr. J. A. Beavers, of Canton, delivered an address on equine practice. This was discussed by Dr. Houston and others. Dr. Adolph Eichhorn, of Pearl River, N. Y., delivered an address on contagious abortion. The meeting recessed for lunch at 1:30 p. m.

At the afternoon session a paper was presented by Dr. K. U. Jones, telling of the advantages of cooperation between the practicing veterinarian and the State Live Stock Sanitary Board. This was very thoroughly discussed. Dr. Wm. M.

Bell, of Nashville, Tenn., was next on the program and gave a very instructive talk on small animal practice.

The evening program was devoted to the subject of anthrax. Dr. O. M. Norton, of Greenville, presented a paper giving observations on 25,000 vaccinations against anthrax. This paper was very freely discussed by Drs. C. E. Salsbery, of Kansas City, Mo., Adolph Eichhorn, of Pearl River, N. Y., John Reichel, of Philadelphia, Pa., and many members of the Association.

At the business session which followed, Dr. Wm. P. Ferguson delivered his presidential address, which contained much of interest to the practitioners as well as to the Association. Dr. C. G. Stallworth presented his report as Secretary-Treasurer.

An election of officers for the ensuing year resulted as follows: Dr. R. H. Mohlenhoff, Cleveland, president; Dr. M. J. Luster, Clarksdale, Miss., 1st vice-president; Dr. E. H. Berry, Leland, Miss., 2nd vice-president; secretary-treasurer, Dr. C. G. Stallworth, Drew, Miss.

The second day of the meeting was devoted to a clinic held at the hospital of the Norton Brothers. Cases were presented for operations which were performed as follows: Fistula in a mare, Dr. O. M. Norton; paralysis of the larynx in a mule; Dr. W. L. Gates; fistula in a horse, Dr. J. A. Beavers; poll evil in a mule, Dr. W. L. Gates; paralysis of the larynx in a mule, Dr. F. J. Douglass; castration of a stallion, Dr. E. S. Norton; sit-fast in a mule, Dr. M. J. Luster; ovariectomy in a bitch, Dr. Wm. M. Bell; ascites in a hog, Dr. Wm. P. Ferguson.

IOWA VETERINARY ASSOCIATION

Although the attendance was only about 300, nearly 100 short of the usual number, the 1925 annual meeting of the Iowa Veterinary Association, held January 20-21-22-23, at Des Moines and Ames, was considered a wonderful meeting from the standpoint of good accomplished for the profession and the interest in the program presented. From the president's address to the last paper, and including reports of committees, words of encouragement showing real constructive work on the part of the Association officers and committees caused those present to feel that the situation in Iowa, despite the agricultural depression, will eventually turn out favorably for the profession.

After the opening business session, the following program was

presented, which was given close attention and greatly appreciated:

"A Review of Some Modern Surgical and Medical Practices," Dr. L. A. Merillat, President of the American Veterinary Medical Association.

"Spaying Heifers," Dr. T. G. Fultz, Pella.

Report of the Committee on Surgery, presented by Dr. H. E. Bemis, Ames.

"My Method of Handling Sow Obstetrics," Dr. L. L. Lindsey, Graettinger.

A question box on parasites, conducted by Dr. Maurice C. Hall, Washington, D. C., lasted for an hour and one-half and proved so beneficial that the Association voted to have the questions and answers transcribed and a copy sent to each member.

The second day was devoted to milk and meat inspection and to tuberculosis control and eradication. Approximately one-half of the counties in Iowa are now engaged in area work and several hundred towns have milk inspection ordinances; so this program proved very interesting and splendid papers and discussions were presented as follows:

Motion picture—"Clean Herds and Hearts," by Dr. W. J. Embree, Western Weighing and Inspection Bureau, Chicago, Ill.

"Public Postmortem Demonstrations of Cattle Reacting to the Tuberculin Test," by Dr. H. C. Smith, Fort Dodge.

"County Fair Exhibits on Tuberculosis," by Dr. C. J. Scott, Knoxville.

"A System of Milk Inspection for a Small Town," by Dr. W. F. Miller, Storm Lake.

"Milk and Meat Inspection in Iowa," by Dr. R. G. Clark, Chief of Dairy and Food Division of the State Department of Agriculture, Des Moines.

"General Live Stock Losses," by Dr. H. R. Davidson, Institute of American Meat Packers, Chicago, Ill.

"Veterinary Activities of the Department of Agriculture," by Mark G. Thornburg, Secretary of the Iowa Department of Agriculture, Des Moines.

"Making a Modified Accredited Area," by Dr. G. M. Carson, Thompson, Ia.

"The Relation of Avian to Mammalian Tuberculosis as Shown by the Marketing of Live Stock from Modified Accredited Areas," by Dr. H. R. Smith, Live Stock Commissioner, Union Stock Yards, Chicago, Ill.

A question box on tuberculosis was conducted by the President.

The real feature of the meeting was the banquet and the evening program in connection with it, the night of the second day. The members had asked their state representatives and senators to be their guests and the Association arranged to furnish free tickets for guests. Approximately one hundred senators and representatives and two hundred veterinarians

and ladies attended. An educational program with some high-class music had been arranged.

During the banquet, several vocal numbers were sung by Mrs. May, of Des Moines, a splendid soprano soloist, and to start the evening program the Des Moines Chamber of Commerce sang a group of songs enjoyed by all and the audience sang the famous "Iowa Corn Song." Dr. H. D. Bergman, president of the Association, introduced the speakers. First, Dr. L. A. Merillat, president of the A. V. M. A., spoke on "The Veterinary Profession in America." In a very forceful manner, illustrated by personal experiences, he told of conditions in France when the American Army did not have its Veterinary Corps organized and showed what the failure to supply an adequate veterinary service cost in lives and money. He described Russia without veterinary service sufficient to control contagious diseases since the war, due to demoralization of the profession. He depicted contagious animal diseases in other countries and pointed out that the reason this country is the safest country in the world in which to engage in the live stock industry is that through its veterinary profession the industry is protected. He described the tendency on the part of some agricultural organizations to substitute for the graduate veterinarian men trained for only a few days and weeks in veterinary matters, and he referred to the two-day, hog-vaccination schools in Iowa.

Following Dr. Merillat, Dean C. H. Stange, of Iowa State College, spoke on "Veterinary Education." He reviewed the history of veterinary education in America, outlined the requirements of the present course in veterinary science, took up the situation of the graduate after leaving school, told of the discouragements facing the practitioners, and related facts regarding the tendency of many well-trained veterinarians to go into other work. He showed clearly that higher veterinary education is for the best interest of the public and prosperity of the live stock industry and that any laws which lower the standard of veterinary service are incompatible with higher veterinary education. He gave statistics on the enrollment of our veterinary colleges, but stated that the demand for veterinarians should increase with better conditions in agriculture and with the proper appreciation for the profession.

The next speaker, Dr. Mark G. Thornburg, secretary of the Iowa Department of Agriculture, spoke on "The State Depart-

ment of Agriculture and Its Relation to the Veterinary Profession in Iowa." He discussed the control and eradication of contagious animal diseases in Iowa and the necessity of having well-trained veterinarians in the State for this important work. He reviewed the work of his department and the use of veterinarians, both regularly employed and private practitioners, and stated that the cooperation between the profession and his department was splendid.

After this, President Bergman called on Dr. R. C. Mills, of Redfield, Iowa, who was recently elected to the Iowa Senate. The Senator responded, showing a great deal of enthusiasm for the profession and its achievements. Then the speaker of the House of Representatives was called upon and he responded very pleasantly, one of his humorous remarks being that the people of Iowa had showed good judgment in electing three physicians to look after the members of the House and one veterinarian to look after the Senate.

After the speaking program, two motion pictures were shown, following out the theme of the evening program, which was printed on the back of the folder:

"The live stock industry is the corner-stone of America's wealth and the veterinary profession is its greatest safeguard."

The first picture was the new B. A. I. film on "Suppressing Foot-and-Mouth Disease." Dr. G. E. Golden, of Sioux City, Iowa, who had been engaged in the recent epizootic in California, explained the pictures as they were run. This picture and the explanation were greatly appreciated.

The last part of the program was an illustrated discussion of "Veterinary Conditions in South America," by Dr. E. A. Cahill, of the Pitman-Moore Laboratories, who had recently returned from a trip to South America. Dr. Cahill not only completed telling what adequate veterinary service means to a country, but he showed in a very interesting way what the other speakers had told—contagious diseases uncontrolled, sanitary conditions bad, as seen in countries without adequate veterinary service. He showed what the governments were doing in erecting veterinary schools finer in equipment and more elaborate in structure than any of ours, that in place of curtailing expenditures for higher veterinary education they were increasing them, and that the people were anxious to have veterinarians to help solve their problems.

Such an illustrated address concluding the evening program culminated an occasion which will undoubtedly do the profession in Iowa a great deal of good, for if the profession is understood there need be no fear for its future. The veterinarians present benefited by strengthening their faith in the profession and the legislators, our guests, learned in a very interesting manner, they said, what the profession stood for—service to the live stock industry and the public. Nothing was asked of them except their appreciation for the profession and after the educational program presented they could not help but express that—and they did.

The third day of the meeting the following papers were presented and thoroughly discussed:

- "Azoturia," Dr. W. P. Bossenberger, Williams, Ia.
- "Equine Influenza," A. Lockhart, Kansas City, Mo.
- "Auto-Intoxication of Pregnant Ewes," Dr. W. C. Verploeg, Pella, Iowa.
- "Postmortem Pathology," Dr. E. A. Benbrook, Ames, Ia.
- "Animal Husbandry Activities of Interest to Iowa Veterinarians," Dr. K. W. Stouder, Ames, Ia.
- "Suggestions on Small Animal Practice for the General Practitioner," Dr. D. A. Eastman, Cedar Rapids, Ia.
- "Poultry Diseases and Poultry Practice," Dr. F. L. Buck, Grand Junction, Ia.
- "A Report on the Recent Epidemic of the So-Called Chicken Flu," Dr. Chas. Murray, Ames, Ia.
- "Sanitation in Disease Control from a State Official's Standpoint," Dr. P. Malcolm, Des Moines, Ia.

The fourth day was devoted to the clinic which was held at the Iowa State College, at Ames. Approximately 150 veterinarians attended. The following program was carried out in the usual efficient and interesting way that clinics are conducted at the College:

- "Autopsy of Ox and Pig," by Dr. E. A. Benbrook, Ames, Ia.
- "Examination and Surgery of the Oral Cavity of the Horse," by Dr. L. A. Merillat, Chicago, Ill.
- "Surgery of the Neck and Shoulders of the Horse," by Dr. F. B. Young, Waukegan, Ia.
- "Surgical Anatomy of the Parotid and Mandibular Regions of the Ox," by Dr. H. S. Murphey, Ames, Ia.
- "Spaying Heifers," by Dr. H. E. Bemis, Ames, Ia.
- "Application of Dressings for Treatment of Fractures in the Small Animal," by Dr. C. H. Covault, Ames, Ia.

During the meeting the following special items of interest to the profession were brought out. In area work, in tuberculosis eradication, 38 regularly employed veterinarians are holding positions as country tuberculosis inspectors and 91 practitioners are assisting on the per diem basis. In hog vaccination work, according to the records, 80 per cent of the serum used in Iowa

last year was used by veterinarians. Since last July approximately a dozen farmer-vaccination schools have been held which have been lightly attended, but 60 counties have made applications for schools on sanitation and disease control, without any reference to teaching lay vaccination. The State Department of Agriculture is trying to enforce the serum and virus law by restricting farmer vaccination to the owner's herd only. The State Farm Bureau officers have agreed to use their influence to check county agents handling serum and virus. The legislative committee of the Association has been promised recognition in all legislative matters concerning the welfare of the profession and the protection of the live stock industry. The above are only some of the things brought about by persistent work of the officers of the Association for the good of the membership.

The resolutions adopted recommended the use of approved methods of vaccination of dogs and other animals, against rabies, in infected territories; expressed appreciation for the attendance of the State legislators at our evening program; endorsed the resolution recently adopted by the United States Live Stock Sanitary Association recommending that all vaccination of live stock in public stock-yards be done by qualified veterinarians under federal supervision; endorsed the policy recently adopted by the A. V. M. A. and urged the national association to pursue the policy as outlined.

The election of officers resulted as follows: President, Dr. C. J. Scott, Knoxville; first vice-president, Dr. H. C. Stewart, Chariton; second vice-president, Dr. C. E. Juhl, Osage; secretary-treasurer, Dr. E. R. Steel, Grundy Center; members of the Executive Committee, Drs. J. C. Glenn, Norway, and E. R. Truax, Sac City.

E. R. STEEL, *Secretary.*

MCLEAN COUNTY VETERINARY MEDICAL ASSOCIATION

The annual meeting of the McLean County, (Ill.) Veterinary Medical Association was held in the rooms of the Association of Commerce, Bloomington, Ill., Tuesday afternoon, Feb. 10, 1925. A bad storm prevented a large attendance, but those present displayed a deep interest in the program.

Dr. I. B. Boughton, of the University of Illinois, addressed the meeting concerning plans for the approaching veterinary

conference to be held at the University. Dr. A. E. Tunnicliff presented "The New Disease of Poultry." Dr. J. S. Koen addressed the meeting on the subject of "Publicity for Veterinarians."

At a business session, which followed, officers for the ensuing year were elected as follows: President, Dr. E. H. Marquardt, Bloomington; vice-president, Dr. C. B. White, Stanford; secretary-treasurer, Dr. J. S. Koen, Bloomington.

J. S. KOEN, *Secretary.*

VETERINARY ASSOCIATION OF MANITOBA

The annual meeting of the Veterinary Association of Manitoba was held at the Manitoba Agricultural College, Winnipeg, February 11, 1925.

The meeting commenced with the business session at 10 a. m., held in the Horticultural Building. The chair was occupied by the president, Dr. A. Savage, and there were about thirty members in attendance.

The report of the secretary-treasurer and registrar, Dr. W. Hilton, showed the affairs of the Association to be in a sound and healthy condition. After paying all expenses for the year, the total funds remaining on hand amounted to \$603.45. The register of the Association gives a list of 134 active members and 8 honorary members.

Dr. W. J. Hinman, of Winnipeg, a member of the Association for 35 years and a graduate of the Ontario Veterinary College in the year 1875, was elected an honorary member. The scrutineers appointed were Dr. J. W. Fasken, Portage la Prairie, and Dr. M. T. Lewis, of Stonewall.

The following were elected members of the Council for the ensuing year: Drs. A. Savage, W. Hilton, J. B. Still, H. R. McEwen, A. L. Alton, J. R. Fisher and N. V. James. The Council then elected officers as follows: President, Dr. N. V. James, Gladstone; vice-president, Dr. A. L. Alton, Portage la Prairie; secretary-treasurer and registrar, Dr. W. Hilton, Winnipeg; Board of Examiners, Drs. A. Savage, J. B. Still and J. R. Fisher; auditors, Drs. S. H. Kesten and R. H. Lay.

Lunch was provided in the dining hall, at which the members were welcomed by Dean McMillan. An interesting address was also made by Mr. J. H. Evans, Deputy Minister of Agriculture, who laid stress upon the value of the services of the

members of the veterinary profession to agriculture in the Province, through the conservation of the health of the live stock.

The afternoon session was held in the live stock arena before a large attendance, and consisted of a series of clinical demonstrations. Dr. A. Savage, Animal Pathologist at the College, demonstrated the "Examination and Treatment of Uterine Cervicitis in Cattle."

Dr. S. Hadwen, of Saskatchewan University, gave a highly interesting demonstration and discussion of "Internal Parasites in the Horse." A suitable subject for demonstration had been obtained, which afforded ample material for Dr. Hadwen to show the various species of internal parasites with which horses are infected in this country, the organs in which they are found, their characteristics, the injury caused by them and measures to be taken for their eradication.

The operation of spaying heifers was carried out by Dr. A. L. Alton, of Portage la Prairie, in a highly workman-like manner and his demonstration of the proper technic of this operation was followed with deep interest by all present.

J. B. STILL

Resident Sec. for Manitoba

CONESTOGA VETERINARY CLUB

The Conestoga Veterinary Club of Pennsylvania held its second regular monthly meeting of the year at the Stevens House, Lancaster, Pa., February 12, 1925.

Professor L. A. Klein, Dean of the University of Pennsylvania School of Veterinary Medicine, was the speaker of the evening and delivered an instructive lecture on "Drugs and Their Action on the Genital Tract of Cattle."

The meeting was well attended and the lecture was one of a series being given by the University of Pennsylvania Extension School and the discussion which followed was most interesting.

The next meeting will be held at the Stevens House, Lancaster, Pa., March 12, 1925.

HENRY S. WEBER, *Secretary.*

A DISTINCTION

First Flea: "Been on a hike?"

Second Flea: "No, on a tramp."

MISCELLANEOUS

DOCTOR HAYS TO NEW POST

Dr. C. H. Hays has been appointed Chief of the Nebraska Bureau of Animal Industry. Although not an applicant for the position, his executive ability in live stock sanitary control work was so well known that Governor McMullen, the new chief executive of Nebraska, departed from the usual custom in making such appointments and went outside of the list of applicants for the position.

The appointment apparently has the approval of all interests in Nebraska, as Dr. Hays has become very popular with the members of the veterinary profession, as well as the live stock



DR. C. H. HAYS

men, during the several years he has been located in the State.

Ever since his graduation from the Ohio State University, in 1908, Dr. Hays has been in the employ of the U. S. Bureau of Animal Industry and has been stationed at the following points: First, on meat inspection work at Detroit, Mich.; then on hog cholera work at Burkeville, Va.; at Kalamazoo, Mich., and Indianapolis, Ind., on hog cholera control work; and then at Lincoln, Nebr., where he has had charge of hog cholera control and tuberculosis eradication work for the Bureau for the past five years.

VETERINARIANS HELP SWINE BREEDERS

The Tama County (Iowa) Pure Bred Swine Breeders' Association numbers among its members three veterinarians actively engaged in practice in the county. One of these, Dr. C. G. Moore (Iowa '12), of Toledo, was recently elected president of the organization.

The members of the Association have been very active in promoting a number of activities for the purpose of encouraging and assisting the improvement of swine husbandry. This



DR. C. G. MOORE

organization fostered the register of merit idea for brood sows last year, and this has attracted a great deal of attention through the records made by some of the sows in the competition.

A vast amount of good has been accomplished by the Association in the direction of demonstrating the value of sanitation in decreasing the cost of pork production through reducing losses caused by parasitic and infectious diseases which are so commonly met where the buildings and surroundings provided for the hogs are insanitary.

LOST AND FOUND

A letter received early in February, from Dr. C. L. Sanders, of Dayton, Ohio, reported that his Ford coupe, with fully equipped bag, had been stolen January 24, 1925. The bag was a black leather affair and contained an army hypodermic kit,

stethoscope, balling-gun and some drugs. These were in four-ounce bottles on one side and one-ounce bottles on the other.

The license number of the car was 459694. The car had an A. V. M. A. auto emblem on the right side. A later letter from Dr. Sanders brought the word that the car had been recovered but not the contents. If these should be offered for sale to any one reading this notice, communicate by wire with Dr. Sanders.

Speaking of stolen Fords, Dr. E. I. Smith, of Nashville, Inspector in Charge of Tuberculosis Eradication and Hog Cholera Control in Tennessee, has had his Ford coupe stolen twice within the past six months.

Last year, in September, he had his car parked just across the street from his office and, to his surprise, when he was ready to go home, the car was gone. Dr. Smith immediately reported the loss to the police. After the expiration of three days, the police notified the Doctor that they had found his car. They were rather indefinite about the charges for towing it in, going on to say that they had to replenish it with gasoline and oil. Finally, however, after hedging around, they informed Dr. Smith that it would be worth about \$2.00, \$2.50 or \$3.00. Following this, he paid the officer \$3.00, did not wait for a receipt or explanation, but climbed into his car and rode home. The car was not damaged, but a few tools had been stolen.

In December, Dr. Smith parked his car on Broad Street and stepped into a hardware store, less than a block away, and when he came out the car was gone again. The police were promptly notified and in about nine days it was located on the same street where it was originally parked, only on the opposite side. Not a thing was missing. It had stood out in the freezing snap in December, however, and the engine block and head were broken. Dr. Smith said he was delighted to recover his car and immediately had it hauled to the garage and new block and head installed. The radiator suffered little. In addition to the necessary repairs, the Doctor had a "Lock-well" steering wheel installed. He has had no more trouble, but says if he loses it again, he will get the oldest, shabbiest Ford he can find.

It is believed that local joy-riders took the car each time.

NO MONKEY BUSINESS

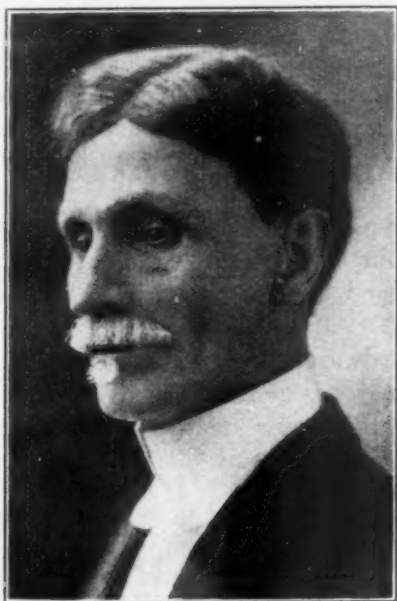
"Doctor, why don't you use the monkey gland operations among your clientele?"

"Oh, I hate to ape others."—*Moonshine.*

NECROLOGY

MATTHEW HARRISON McKILLIP

Dr. M. H. McKillip was born in Montreal, Quebec, March 16, 1848, and died at his home, in Chicago, Ill., December 20, 1924, being survived by his widow (nee Ellen Boomer), also of Chicago, and seven children, three daughters and four sons, all married and identified with the present social life of that city. Three of the boys are veterinarians: Drs. George B., Walter J., and Chester A. McKillip, who are still conducting the practice which has been reputed to be the largest ever built up by any one man.



DR. M. H. McKILLIP

At the age of 20 the deceased came to Chicago from La Crosse, Wis., where his father had moved from Montreal in 1853 to work at his trade of horseshoeing, which he had learned in his father's shop. The son developed a busy establishment, which, under the name of Williams & McKillip, was known and is still recalled as one of the large horseshoeing shops of that day. In 1875 he entered the Ontario Veterinary College and the

following year the Chicago (now the Northwestern University) Medical School, alternating his college work between the two institutions. He received his medical degree from the latter institution in 1878 and was graduated from the former in 1879.

Upon graduating, Dr. McKillip built what deserves to be called the first veterinary hospital in Chicago, and equipped it with modern appurtenances. Later, on the same site, was erected and established the McKillip Veterinary College, which was operated under Dr. McKillip's management from 1894 until 1919, when it closed its doors with several other private schools.

Dr. McKillip joined the A. V. M. A. in 1894. He was a member of the Chicago Veterinary Society and the Illinois State Veterinary Medical Association.

The passing of Dr. McKillip is mourned by hundreds of former clients and students, who always paid homage to his dignified bearing, his clean, untainted life, his many achievements and highly professional attainments. A great mind has passed from our realm.

L. A. M.

HENRY WILLIAM SKERRITT

Dr. Henry W. Skerritt, of Utica, N. Y., died suddenly November 12, 1924. Death was due to heart disease.

The deceased was born in Queens County, Ireland, August 7, 1854. His parents came to America in 1857 and settled at Amboy, N. Y. After engaging in business and breeding Jersey cattle and fancy poultry, he decided to study veterinary medicine. He entered the Ontario Veterinary College in 1888 and was graduated two years later. He first located at Deansboro and in 1897 moved to Utica, where he practiced up to the time of his death.

Dr. Skerritt was frequently called upon to act as judge at live stock shows and fairs. He had been a judge at the Chenango County Fair since 1902.

Dr. Skerritt joined the A. V. M. A. in 1912. He was a member of the New York State Veterinary Medical Society, the Central New York Veterinary Medical Society, the Agricultural and Arts Association, of Toronto, and other kindred organizations. He was a member of Masonic Lodge No. 47, of Utica. He is survived by two sons, one of whom, Dr. Wm. H. Skerritt, was associated with him in practice.

THOMAS CAMPBELL McCASEY

Dr. Thomas Campbell McCasey died suddenly, from apoplexy, while making a professional call at Concordia, Kansas, Jan. 5, 1925.

Dr. McCasey was born Feb. 2, 1854, at Wingham, Ontario. He attended the Ontario Veterinary College, and was graduated from that institution in 1886. The late Dr. John Nott (Ont. '73), whom Dr. McCasey had known for some time, located some years previously in Clay County, Kansas. From the alluring report of Dr. Nott, and the strong desire to locate in the then western portion of the fast-growing stock and grain belt of the United States, he immediately after graduation came to Concordia, Kansas, where he made his home, and practiced his profession in that community continuously, with the exception of one year. In 1903 he went to Cuba with the intention of locating, but soon became dissatisfied and returned to Concordia.

Dr. McCasey was the last survivor of the pioneer veterinarians of the state of Kansas. When he came to Concordia in 1886 there were less than a dozen graduate veterinarians in the State. Owing to his wealth of knowledge on veterinary matters and live stock topics in general, he soon became known throughout the central portion of the State. There were few men in the State who enjoyed a broader circle of friends among the veterinary profession and live stock raisers than did Dr. McCasey.

He was deeply interested in the well-being of his community, and was always ready to take an active part in any measure intended to better social conditions of his fellow men. His townsmen, the live stock interests of the State and the veterinary profession have lost an honored member.

Dr. McCasey is survived by his widow, two daughters and three brothers. He was laid to rest in Pleasant Hill Cemetery, Concordia, Kansas, by the Commandery of the Knights Templar, of which he was a member.

L. E. D.

GEORGE DITEWIG

Dr. George Ditewig's many friends throughout the country will be grieved to learn of his sudden death at Garfield Hospital, Washington, D. C., on January 28, 1925. Although he had been under treatment for heart trouble for some time, his death came

as a surprise, as he attended to his office duties as usual on January 27.

Dr. Ditewig was born at Peoria, Ill., February 11, 1863. Prior to entering college, he engaged in farming and stock raising in Illinois. In the spring of 1891 he was graduated from the Chicago Veterinary College with the degree of D. V. S. He was credited with the highest average for collective studies in his class and was awarded the prize in *materia medica*. Following his graduation he entered practice at Canton, Ill., and during the five years that he was in practice he held a commission as assistant state veterinarian.

On February 10, 1897, he was appointed assistant inspector in the Bureau of Animal Industry, U. S. Department of Agriculture, through civil service examination, and was ordered to report to National Stock Yards, Illinois. His qualifications immediately attracted attention and on November 5, 1897, he was transferred to the Davenport, Iowa, meat inspection station as inspector in charge. On November 21, 1903, he was assigned to a larger station at Cincinnati, Ohio, and on August 1, 1906, to the St. Joseph, Mo., station as inspector in charge. He proved so successful in handling the various duties assigned to him that on May 1, 1907, he was requested to assume the duties of traveling inspector.

In 1906 a new meat inspection law had been passed, which had for its object the improvement of the meat inspection service. Dr. Ditewig's duties as traveling inspector were very important in helping to carry this law into effect, and in helping to develop our meat inspection service to its present status of efficiency. With the growth and development of this service it was necessary to enlarge and modify the organization at headquarters, and Dr. Ditewig was called to Washington on November 1, 1911, to assume the duties of Assistant Chief of the Meat Inspection Division, which position he held at the time of his death.

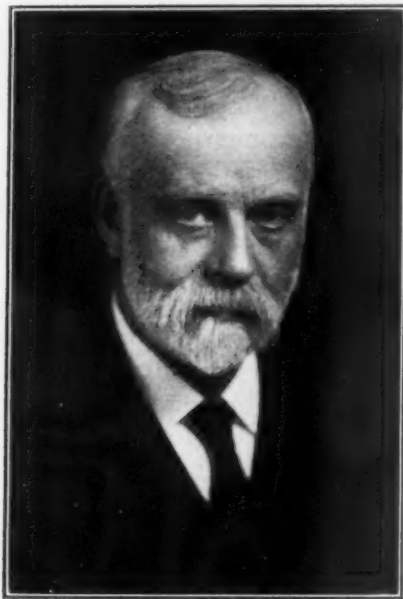
Soon after entering the public service Dr. Ditewig declared his intention of making the work of the Bureau of Animal Industry his life work, and he did. He was a man of more than ordinary intelligence, of fine principles, worthy aspirations, and was endowed with a will to carry his determinations into effect. He was esteemed and respected among his acquaintances as a genial companion and was loved most by those who knew him best. The meat inspection service of the country has lost one of its most able advocates and supporters, the Bureau has

lost one of its most accomplished and efficient employes, and we who knew him have lost a loyal friend whom we respected. Dr. Ditewig left no family.

Dr. Ditewig had been a member of the A. V. M. A. since 1909.

SAMUEL BRENTON

Dr. S. Brenton, of Detroit, Mich., died February 16, 1925. Death was the outcome of complications following a serious operation which he underwent, early in December. He was making slow but apparently satisfactory progress toward recovery until the latter part of January, when his condition became grave. He grew gradually worse until the end came. With his passing the veterinary profession in America lost an outstanding



DR. S. BRENTON

figure, a man with many sterling qualities, one who had endeared himself to a host of friends in all walks of life.

Born in Corbyville, Ontario, October 10, 1858, he entered the Ontario Veterinary College at the age of 20, and was graduated in 1880. He located at Jackson, Mich., and for a short time was in partnership with the late Dr. George W. Dunphy. In 1887 he came to Detroit and established a practice which grew to be one of the largest in the Central West. Dr. Brenton was a keen

diagnostician, a skillful surgeon and a therapist of rare ability. He kept abreast of his profession by attending veterinary association meetings regularly, by reading every new veterinary work as it appeared, by procuring every new instrument or appliance as soon as it was on the market, and by giving a thorough and impartial trial to each new operation, mode of treatment, biological or pharmaceutical product offered the profession.

Dr. Brenton joined the A. V. M. A. in 1891 and during the thirty-three years of his membership attended every annual convention with one exception. Few members have served the Association in as many different capacities. He had the unique distinction of having served twice as the chairman of local committees on arrangements for A. V. M. A. conventions held in Detroit, first in 1900 and again in 1916. He was a member of the Executive Committee for four terms between 1899 and 1907. He was twice elected a vice-president, in 1899 and in 1900. In 1911, at the Toronto meeting, he was elected president. He served as a member of the Finance Committee (1903-04), member of the Committee on Mutual Aid Association (1903-04), member of the Committee on Program (1904-05), Resident Secretary for Michigan (1895-99 and 1905-06), member of Committee on Intelligence and Education (1907-09), member of Committee on Association Seal (1910-11), member of Committee on Necrology (1912-13), member of Salmon Memorial Committee (1918-22), member of Liautard Memorial Committee (1918-21) and member of Committee on Emblem (1920-21).

Until his death, Dr. Brenton was one of the three surviving charter members of the Michigan State Veterinary Medical Association. He served as president of the Association, 1885-86, and held many important committee assignments during later years. In 1923 he was made a life member. He was a member of the Southeastern Michigan Veterinary Medical Association, the Detroit Board of Commerce, the Gridiron Club of Detroit, Union Lodge, F. and A. M., Peninsular Chapter, Diamond Lodge No. 489, I. O. O. F., and Star Council No. 89, Royal Arcanum. He served as secretary of the Michigan State Board of Veterinary Medical Examiners for several terms, and held the chair of surgery in the Detroit Veterinary College while that institution was in existence.

Dr. Brenton is survived by one daughter, Mrs. A. P. Schiffer, and two sons, Arthur S. V. and Willis L., the latter a veterinarian, and two brothers.

WILLIAM H. SMITH

Dr. W. H. Smith, practitioner, of Carman, Manitoba, died December 31, 1924, at the age of 55 years. He was a graduate of the Ontario Veterinary College, class of 1894. He served in the late war as lieutenant in the Imperial Army. He is survived by his widow, four daughters and one son.

MARRIAGES

Dr. J. R. Starkey (K. C. V. C. '22), of Douglass, Kansas, to Miss Mable Blevins, at Colfax, Ill., November 8, 1924.

Dr. F. P. Burke (K. C. V. C. '24), of Shickley, Nebr., to Miss Bernice Pangle, at Belleville, Kans., November 12, 1924.

Dr. Charles H. Chambers (Chi. '20), to Miss Helen Haun, both of Fremont, Nebr., December 7, 1924, at Council Bluffs, Iowa.

BIRTHS

To Dr. and Mrs. James Pooley, of St. Joseph, Mo., a son, James Beverly, November 24, 1924.

To Dr. and Mrs. L. S. Russell, of Brookings, S. D., a daughter, Virginia Faye, November 30, 1924.

To Dr. and Mrs. H. F. Lienhardt, of Manhattan, Kans., a daughter, January 2, 1925.

To Dr. and Mrs. Edward A. Wilson, of Hackettstown, N. J., a daughter, Mary Vivian, January 13, 1925.

To Dr. and Mrs. G. P. Mayer, of Elk Rapids, Mich., a daughter, Mary Louise, January 24, 1925.

To Dr. and Mrs. W. A. Smith, of Heron Lake, Minn., a son, William Albert, January 28, 1925.

PERSONALS

Dr. C. C. Schilt (Ont. '16), gives his new address as 2210 Quebec St., Regina, Sask.

Dr. Arch Freer (Corn. '13), of Ellenville, N. Y., has removed to Charleston, Miss.

Dr. W. E. Martin (O. S. U. '06), of Wapakoneta, Ohio, was on the sick list in January.

Dr. E. B. Cavell (Ont. '06), of Northville, Mich., was a Florida tourist the past winter.

Dr. John M. Hanrahan (Wash. S. C. '17) has removed from Sequim, Wash., to Woodburn, Ore.

Dr. C. C. Franks (Chi. '11), of Grimes, Iowa, is a breeder of big-type Poland-China hogs.

Dr. Paulino Vytiaco (U. Phil. '20), formerly stationed at Manila, is now at Bulan, Sorsogon, P. I.

Dr. Emil Krenek (K.C.V.C. '16), of Alief, Texas, is now at 511 West Sixth Street, Fort Worth, Texas.

Dr. F. H. McNair (Corn. '05), of Berkeley, Calif., is on the job again, after his recent attack of "flu."

Dr. F. J. Olbrich (Iowa '22), recently of Independence, Mo., has located for practice at Owatonna, Minn.

Dr. C. H. Atkinson (Wash. S. C. '20), of Fresno, Calif., is engaged in meat inspection work at Oakdale, Calif.

Dr. Kenneth G. McKay (Wash. S. C. '21), of Colville, Wash., is taking post-graduate work at Iowa State College.

Dr. W. H. Timmons (Cin. '09), of Chicago, Ill., is Chief Veterinarian for the Hartford Live Stock Insurance Company.

Dr. C. W. Fisher (Ind. '17), formerly of Danville, Ky., is reported to be traveling in Florida as advance agent for a circus.

Dr. G. E. Martin (K. S. A. C. '24), formerly in practice at Perry, Mo., and later at Clinton, Ill., has located at Wellsville, Mo.

Dr. P. M. Self (Ind. '09), of Farmersburg, Ind., writes that he was recently the victim of a fire which destroyed his office and equipment.

Dr. Robert J. Donohue (Wash. '12), formerly of Outlook, Washington, has removed to Yakima. Address: 903 South Fourth Avenue.

Dr. A. L. Howard (Iowa '15), formerly of Council Bluffs, Iowa, is now located at Sioux City, Iowa, as County Tuberculosis Inspector.

Dr. E. A. Garleb (Ind. '21) has returned to his station at St. Louis, Mo., and gives us the following address: 4124A McPherson Avenue.

Dr. C. O. Benson (N. Y. U. '19) has been transferred from Canaan, Vt., to Ogdensburg, N. Y., as Inspector-in-Charge for the B. A. I.

Dr. W. W. Lowe (Ind. '20), of Owensville, Ind., took the Pasteur treatment recently, as a precautionary measure, after handling a rabid patient.

Dr. Chester A. McKillip (Mc. K. '09), formerly of Chicago, has established himself in practice at Rockford, Ill. He plans to open a hospital there.

Dr. E. M. Austin (Iowa '18), formerly of Cedar Rapids, Iowa, gives his new address as c/o Advertising Dept., Sears, Roebuck & Co., Chicago, Ill.

Dr. W. B. Lincoln (Iowa '93), state veterinarian of Tennessee, was recently confined to his home, in Nashville, with a severe attack of sciatic rheumatism.

Dr. A. C. Curtiss (Gr. Rap. '11), of Detroit, Mich., has accepted a position with the Board of Health. His present address is 8300 Epworth Boulevard.

Dr. Chas. H. Rosenstiel (Chi. '08), of Freeport, Ill., has been appointed County Veterinarian for Carroll County, Ill. Address: Merchant St., Mt. Carroll, Ill.

Dr. C. F. De Lap (Chi. '20), of Springfield, Tenn., reports having been a victim of a bank failure in his community, along with about ninety per cent of his clients.

Dr. George E. Jacobi (O. S. U. '20), formerly at the University of Maryland, is now with the Jensen-Salsbery Laboratories, of Kansas City, engaged in research work.

Dr. L. H. Batchelder (U. P. '18), recently passed the state board examinations in Maine, with a view to locating at Presque Isle, Maine, for practice, about March 1.

Dr. C. H. Weaver (Ont. '11), formerly attached to the Biological Laboratory, is now stationed at the Central Experimental Farm, Poultry Division, Ottawa, Canada.

Dr. George W. Pedigo (Chi. '10), of Glasgow, Ky., has been appointed a member of the State Board of Veterinary Medical Examiners, succeeding Dr. R. B. Smooth, of Madisonville.

Dr. J. S. McDaniel (K. C. V. C. '09), who has been practicing at Higginsville, Mo., for a number of years, has purchased the practice of Dr. J. C. Kimbrough, at Lexington, Mo.

Dr. T. E. Palmer, of West Salem, Ill., has been selected for the position of Cumberland County (Ill.) Veterinarian. He began his new duties February 1, with headquarters at Toledo, Ill.

Dr. M. J. Hughes (N. Y. U. '20), formerly stationed at Buffalo, N. Y., has been transferred to New York City, on meat inspection work. He is living at 186 Third Ave., Long Island City, N. Y.

Dr. M. C. Fitzwater (Gr. Rap. '06), who recently located at Flora, Ind., has returned to Michigan to accept a position as veterinary inspector for a large dairy association, with headquarters at Kalamazoo.

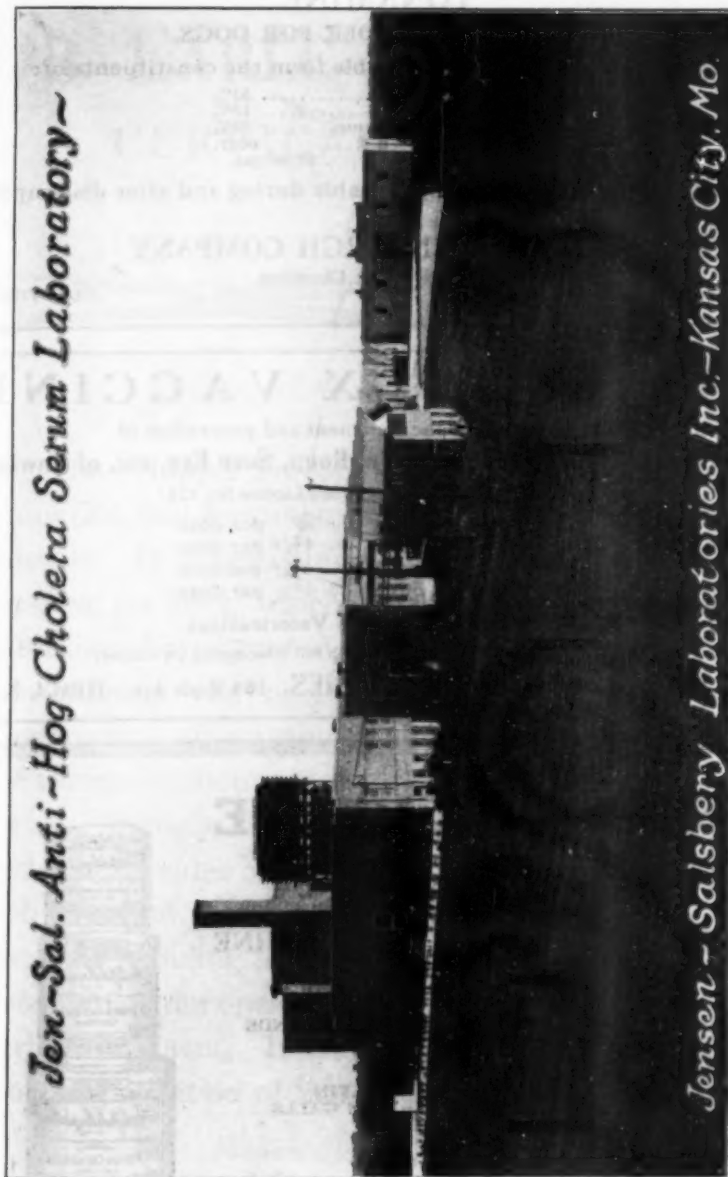
Dr. J. P. Rimstedt (Cin. '13), formerly stationed in Michigan, on tuberculosis eradication work, is now attached to the Indiana force, with headquarters in Indianapolis. Address: 1327 N. Dearborn St.

Dr. H. P. Rea (Ont. '02), of West Branch, Mich., recently lost his veterinary hospital through fire, which destroyed a large frame building in which the hospital was located. Dr. Rea's loss on equipment and live stock was about \$1500.

Dr. Reuben Hilty (O. S. U. '07), of Toledo, Ohio, who has been in partnership with Dr. J. V. Newton (Ont. '78), for a number of years, is now located in his new small animal hospital at 624 Huron St., the partnership having been dissolved January 1. Dr. Newton is devoting all of his time to humane work.

Dr. S. L. Brown (Wash. S. C.), who has been assistant professor of anatomy at Washington State College for the past six years, resigned February 1, to accept a position with the Idaho-Oregon Loan Association. Dr. Geo. R. Fowler (Wash. S. C. '22), will carry on the work in anatomy during the present semester.

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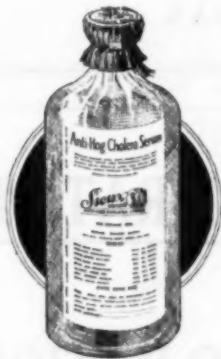
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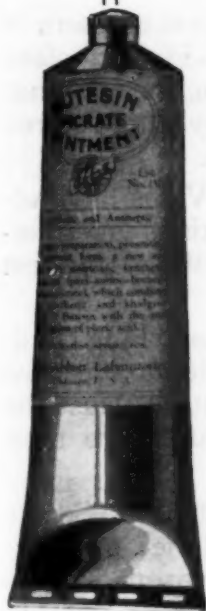
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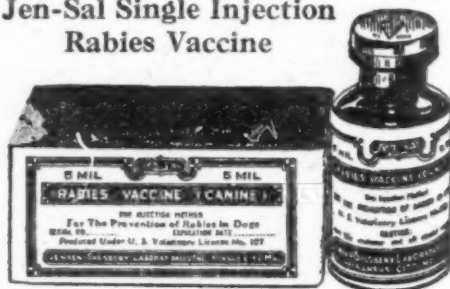
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